

**FIG. 1**

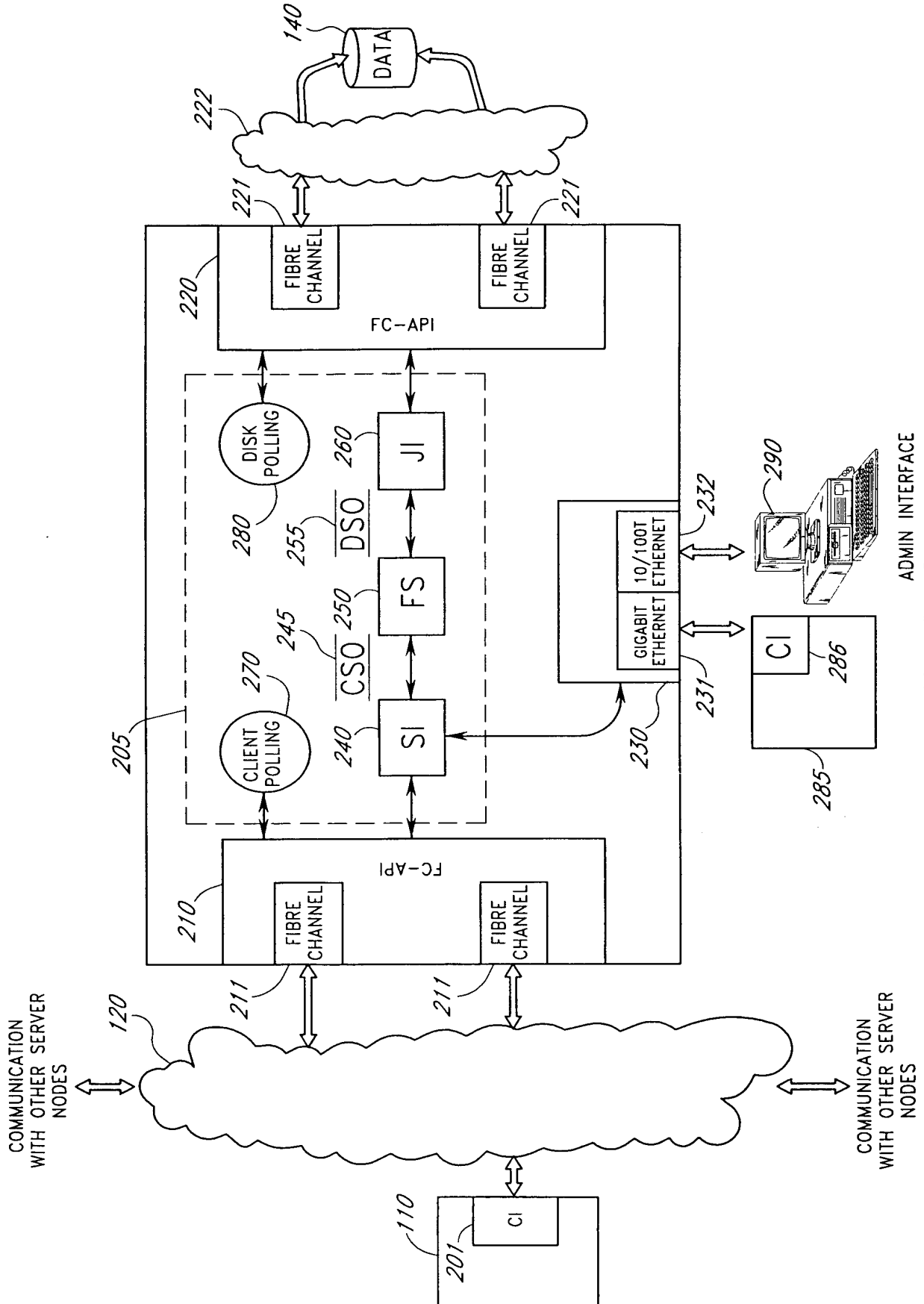


FIG. 2

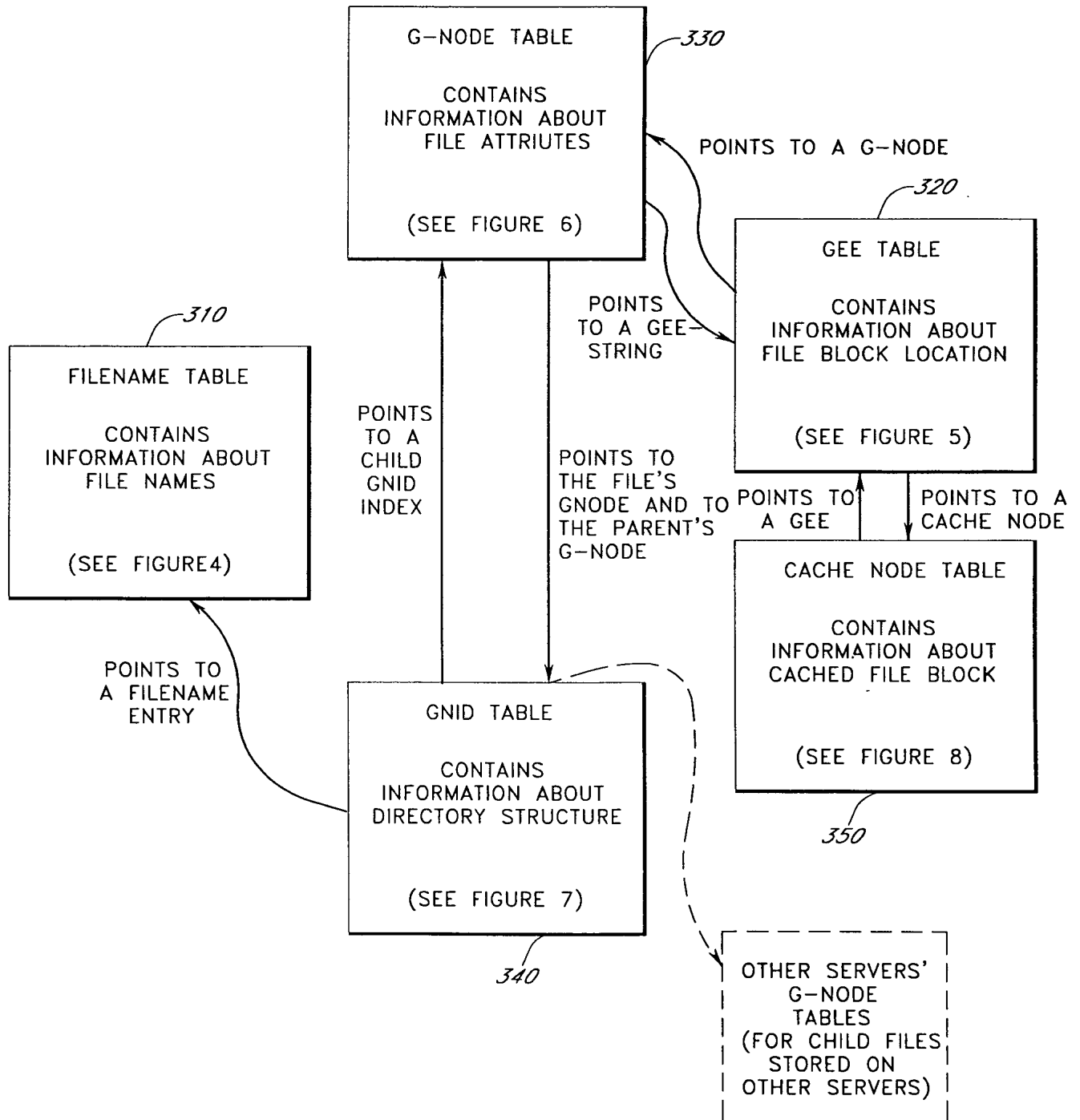


FIG.3

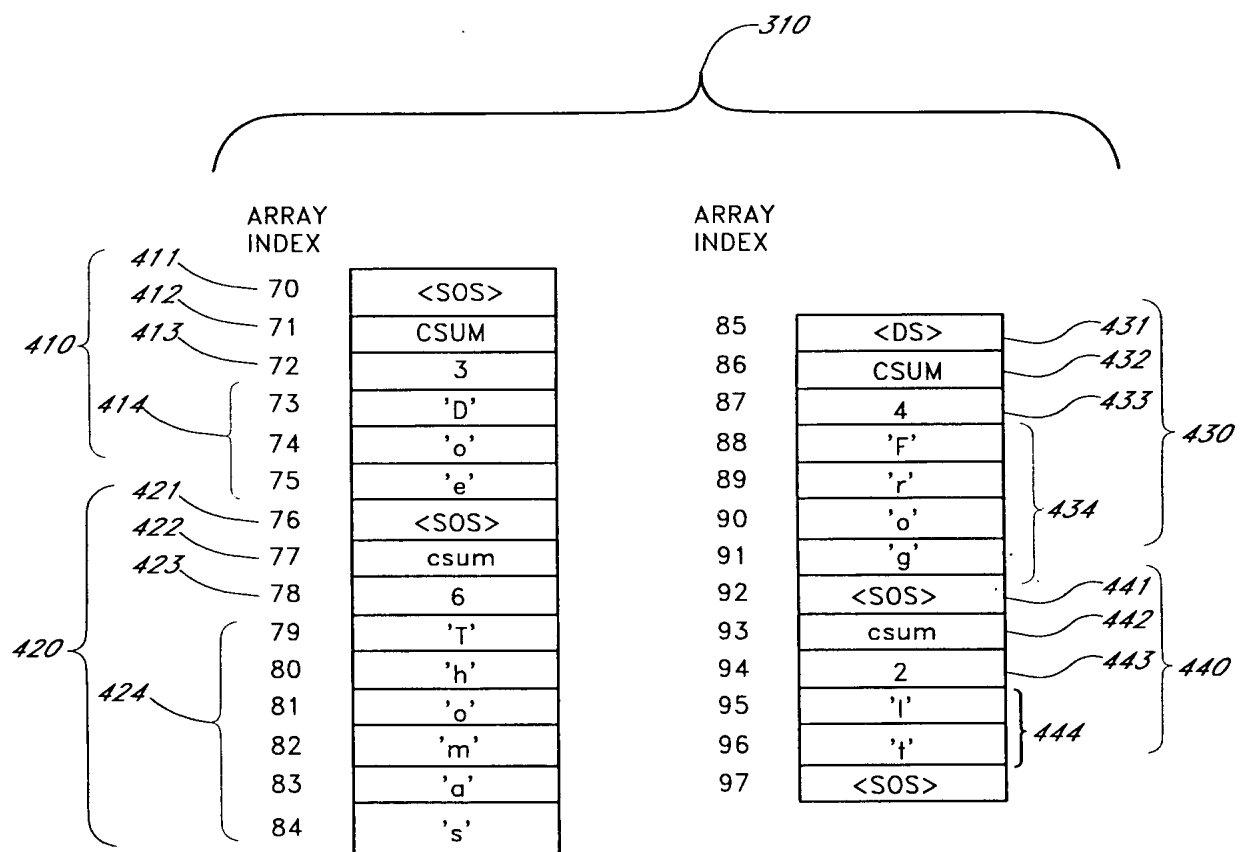


FIG. 4

320

590

591

592

550

551

552

500

INDEX	G-CODE	DATA	FILE LOGICAL BLOCK
510	GNODE	GNODE=67, EXTENT=2, ROOT=TRUE	
511	DATA	DISK LOGICAL BLOCKS: 456,457 DRIVE 13	1
512	DATA	DISK LOGICAL BLOCKS: 667,668 DRIVE 15	2
513	DATA	DISK LOGICAL BLOCKS: 112,113 DRIVE 19	3
514	PARITY	DISK LOGICAL BLOCKS: 554,555 DRIVE 2	
515	DATA	DISK LOGICAL BLOCKS: 458,459 DRIVE 13	4
516	DATA	DISK LOGICAL BLOCKS: 669,670 DRIVE 15	5
517	DATA	DISK LOGICAL BLOCKS: 119,120 DRIVE 19	6
518	PARITY	DISK LOGICAL BLOCKS: 556,557 DRIVE 2	
519	LINK	INDEX 76	
...	...	...	
520	GNODE	GNODE=67, EXTENT=3, ROOT=FALSE	
521	DATA	DISK LOGICAL BLOCKS: 460,461,462 DRIVE 13	7
522	DATA	DISK LOGICAL BLOCKS: 671,672,673 DRIVE 15	8
523	PARITY	DISK LOGICAL BLOCKS: 121,122,123 DRIVE 19	
524	LINK	INDEX 88	
...	...	...	
525	GNODE	GNODE=67, EXTENT=3, ROOT=FALSE	
526	DATA	DISK LOGICAL BLOCKS: 463,464,465 DRIVE 13	9
527	DATA	DISK LOGICAL BLOCKS: 674,675,676 DRIVE 15	10
528	PARITY	DISK LOGICAL BLOCKS: 124,125,126 DRIVE 19	
529	GNODE	GNODE=43, EXTENT=4, ROOT=FALSE	
...	...	...	

FIG.5

ATTRIBUTE DATA	
602	FILE ATTRIBUTE-TYPE
604	FILE ATTRIBUTE-MODE
606	FILE ATTRIBUTE-LINKS
608	FILE ATTRIBUTE-UID
610	FILE ATTRIBUTE-GID
612	FILE ATTRIBUTE-SIZE
614	FILE ATTRIBUTE-USED
620	FILE ATTRIBUTE-FILEID
622	FILE ATTRIBUTE-ATIME
624	FILE ATTRIBUTE-MTIME
626	FILE ATTRIBUTE-CTIME
628	CHILD GNID INDEX
630	GEE INDEX-LAST USED
631	GEE OFFSET-LAST USED
632	GEE INDEX-MIDPOINT
633	GEE OFFSET-MIDPOINT
634	GEE INDEX-TAIL
635	GEE OFFSET-TAIL
636	GEE INDEX-ROOT
638	GNODE STATUS
640	QUICK SHOT STATUS
642	QUICK SHOT LINK

**FIG. 6**

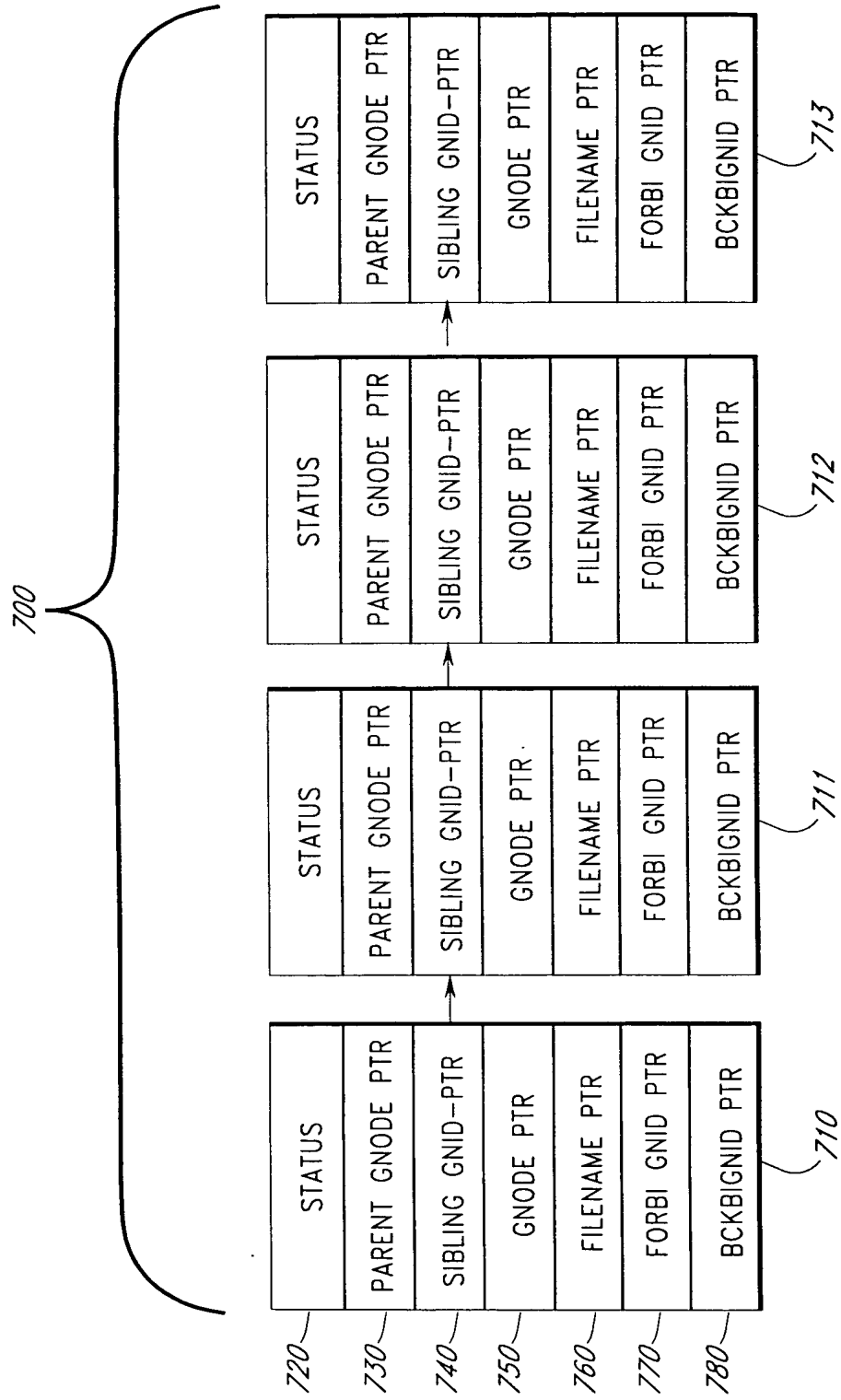
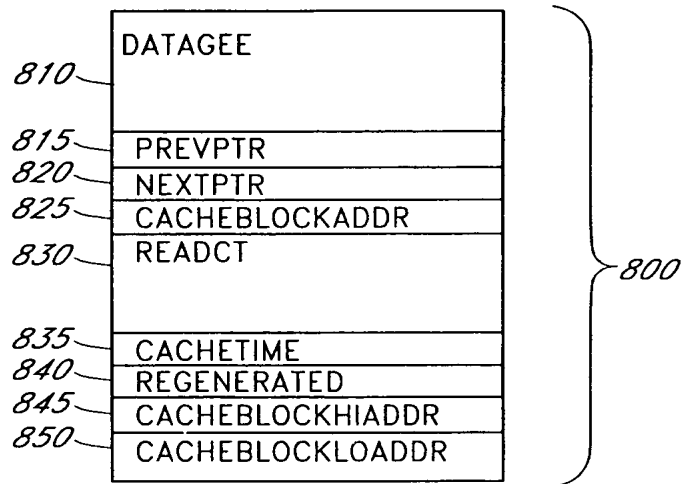


FIG. 7

***FIG. 8A***



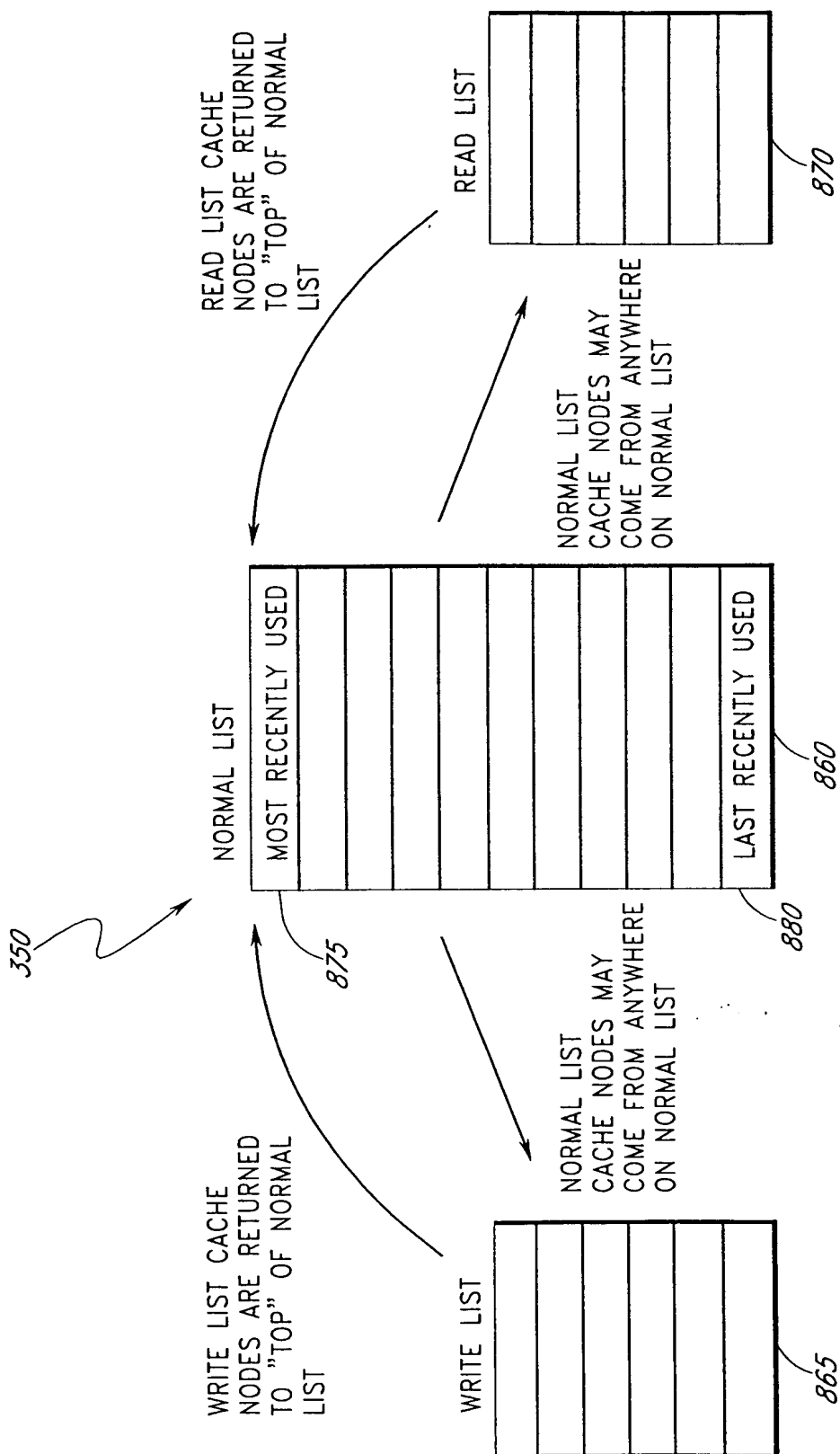


FIG. 8B

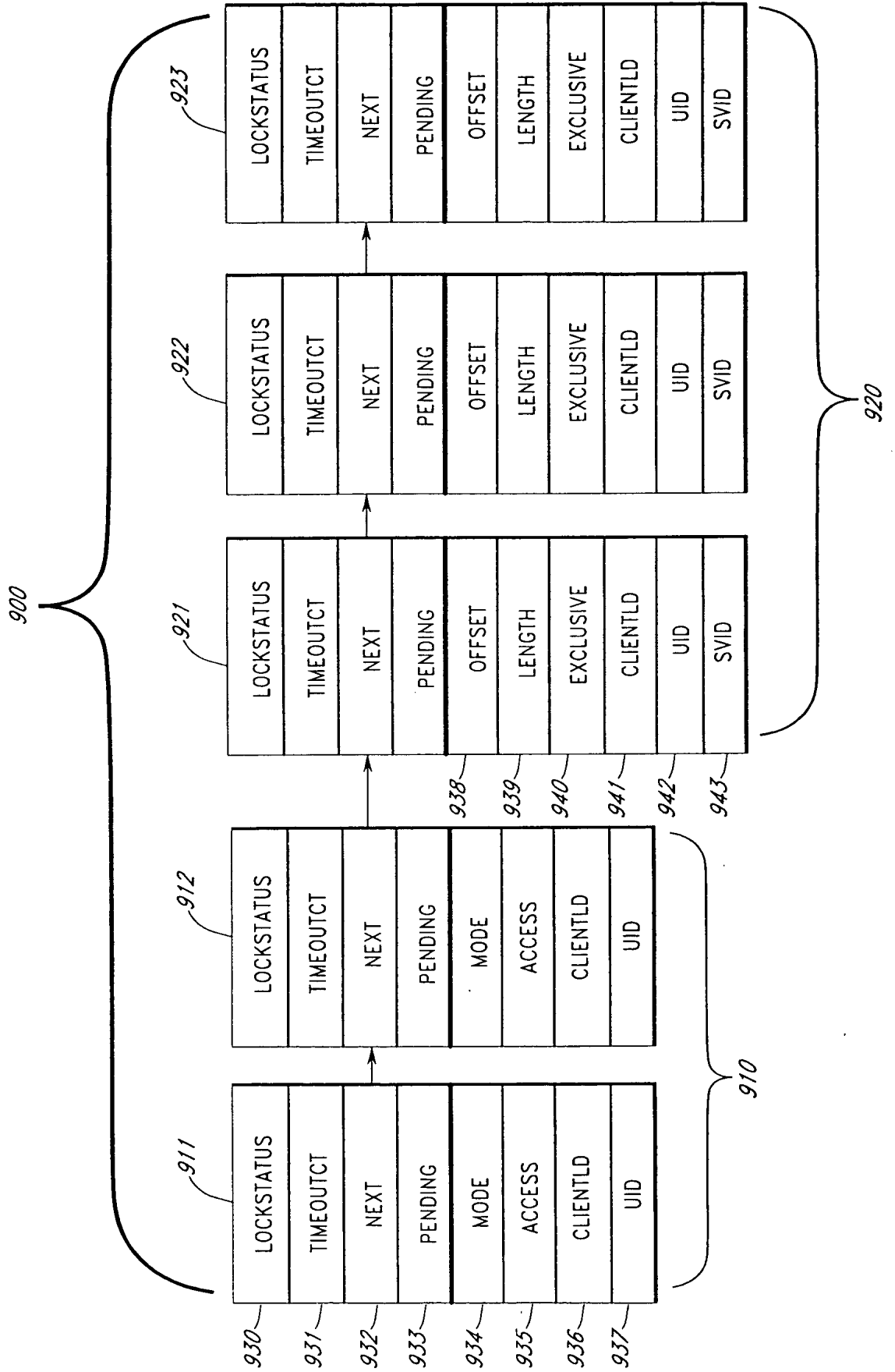
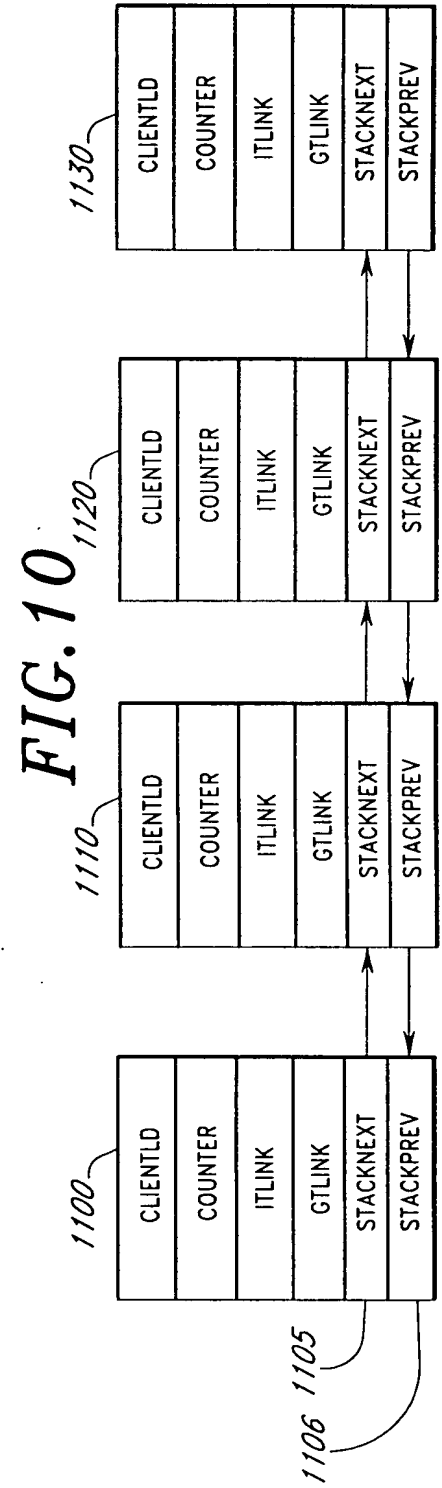
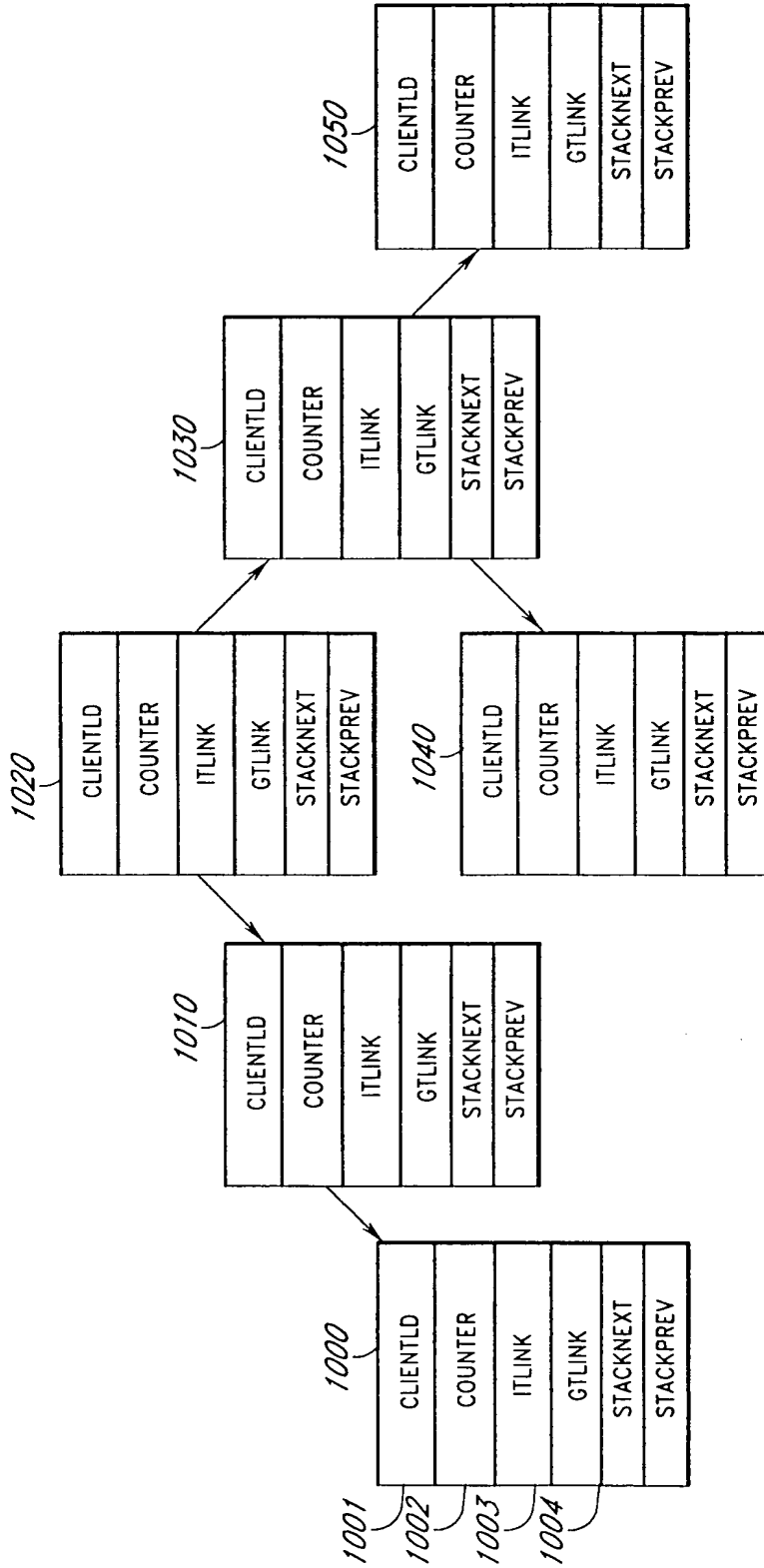


FIG. 9

2025 RELEASE



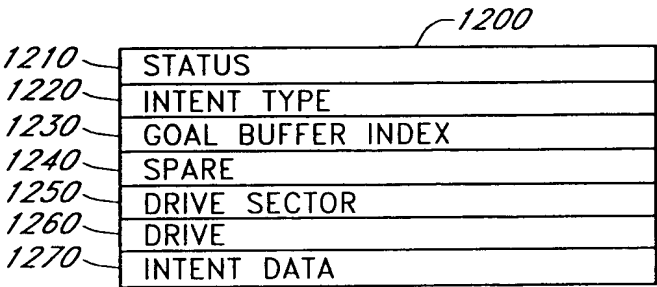


FIG. 12

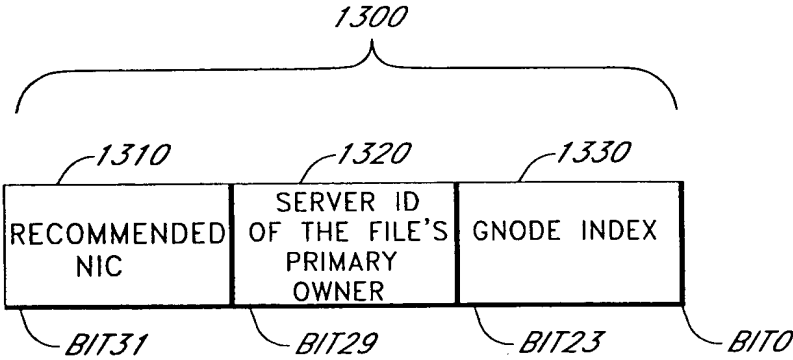


FIG. 13

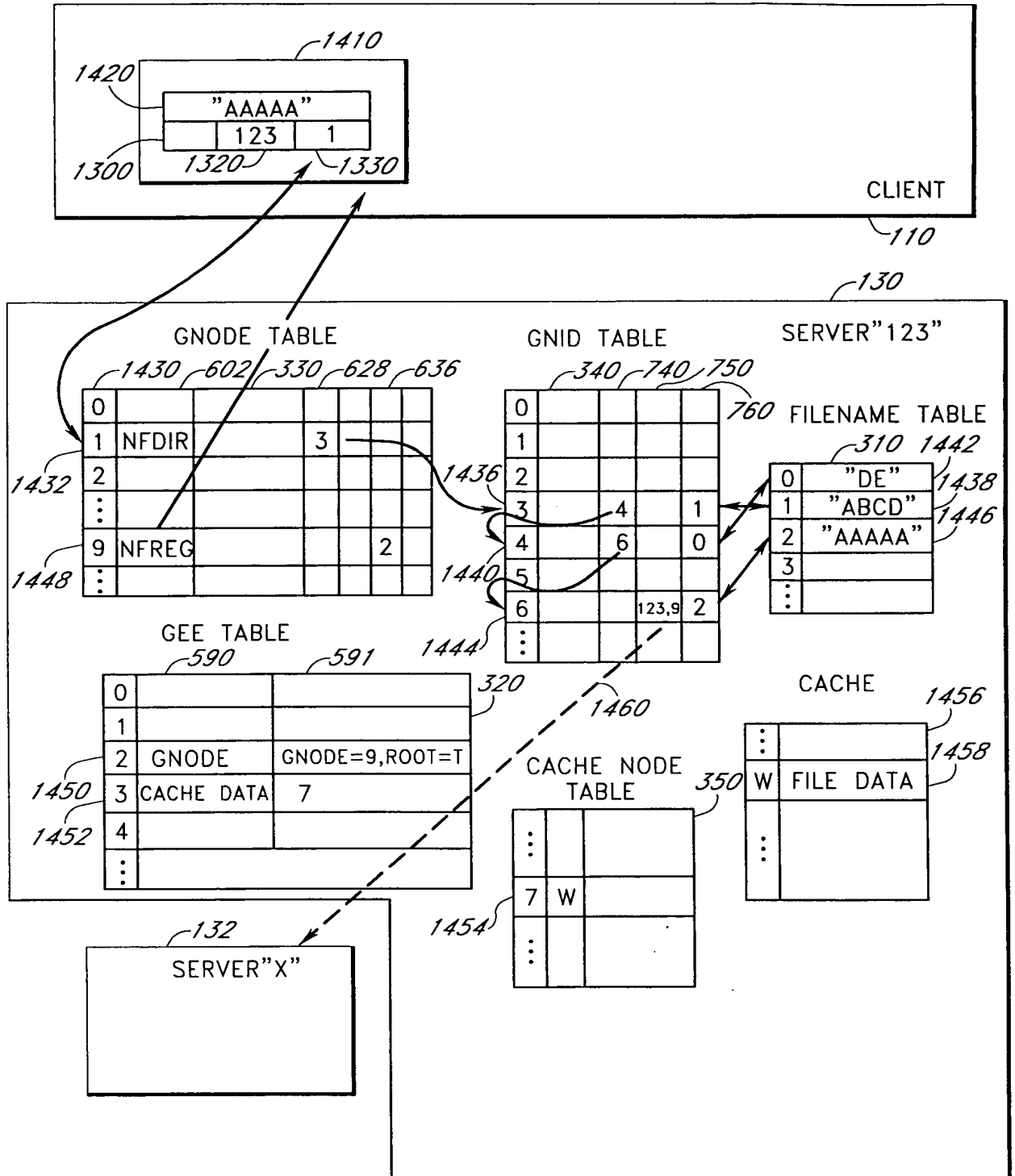


FIG. 14A

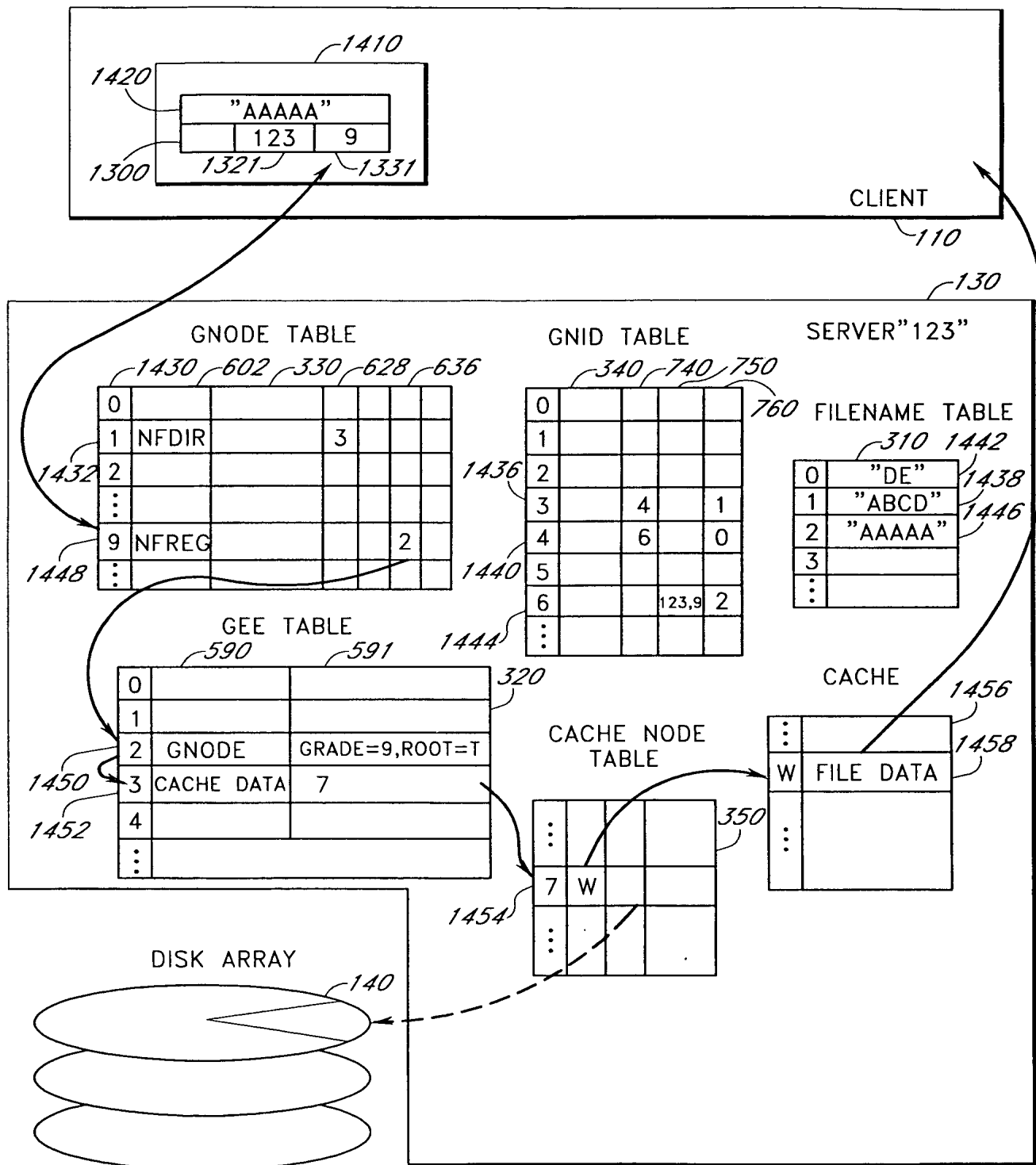


FIG. 14B

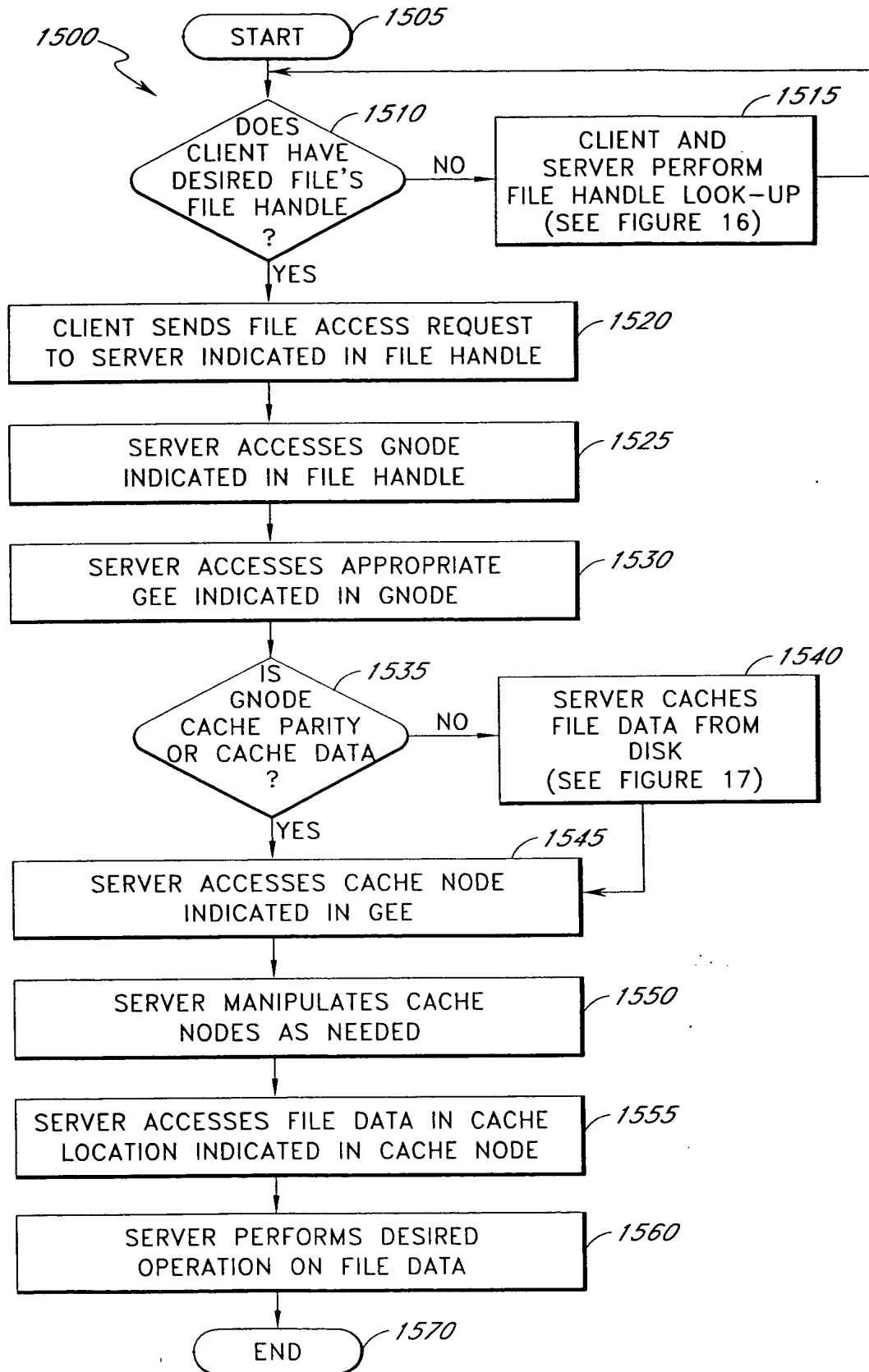


FIG. 15

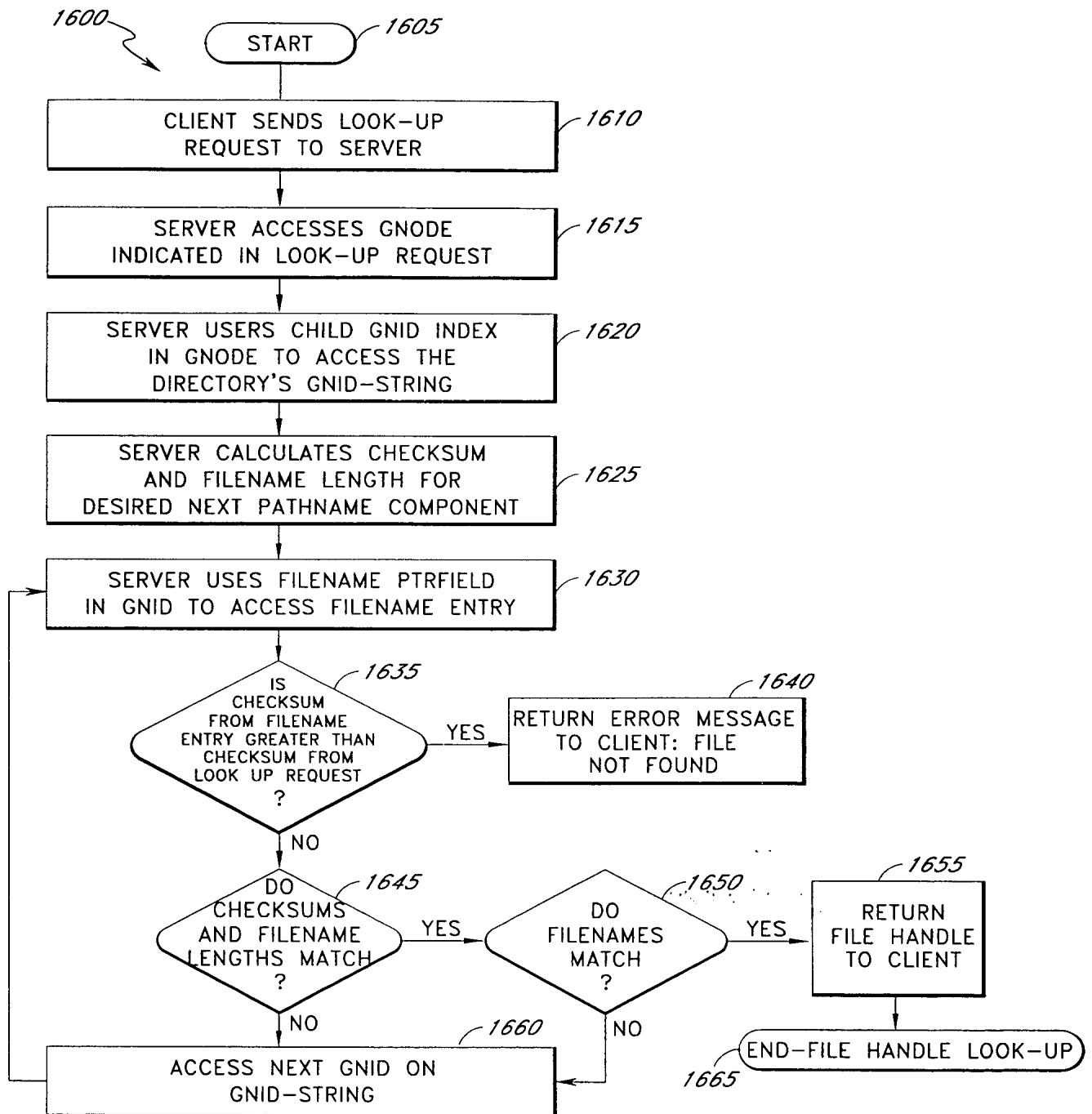
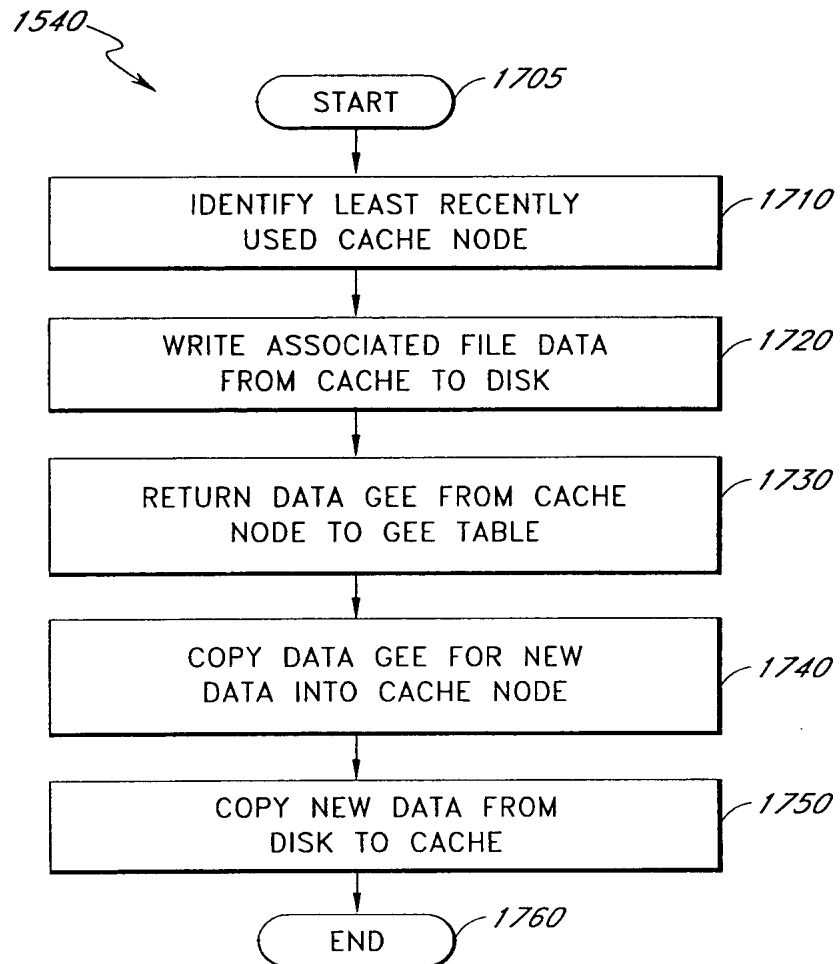


FIG. 16



**FIG. 17**

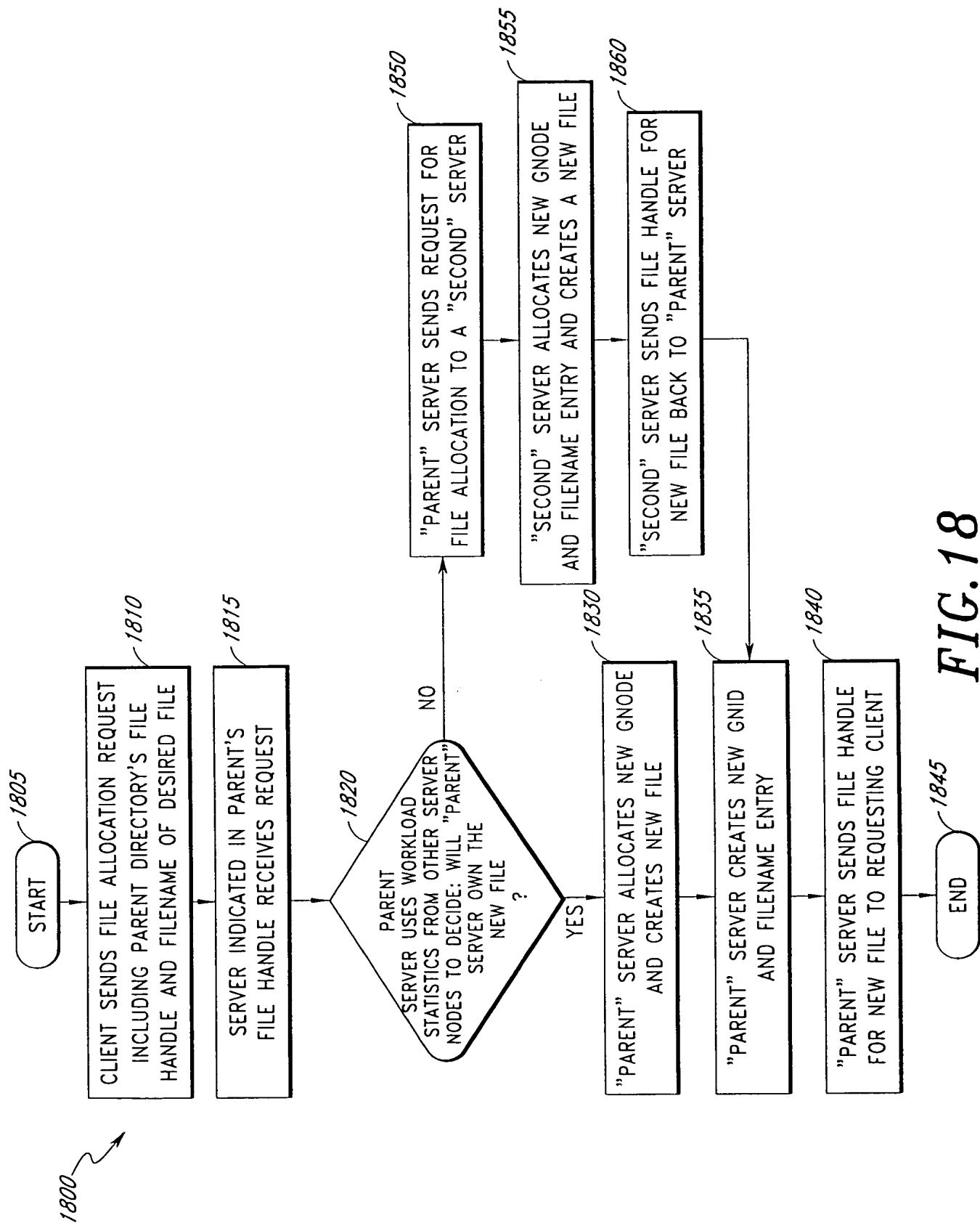


FIG. 18

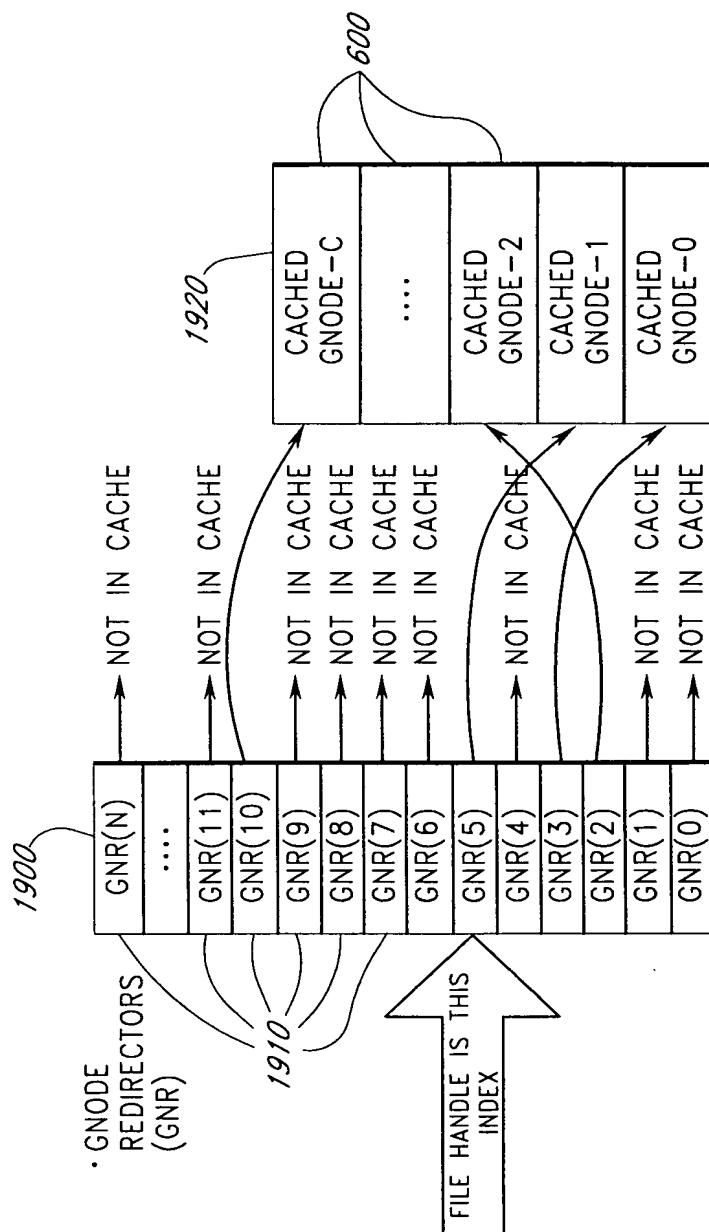
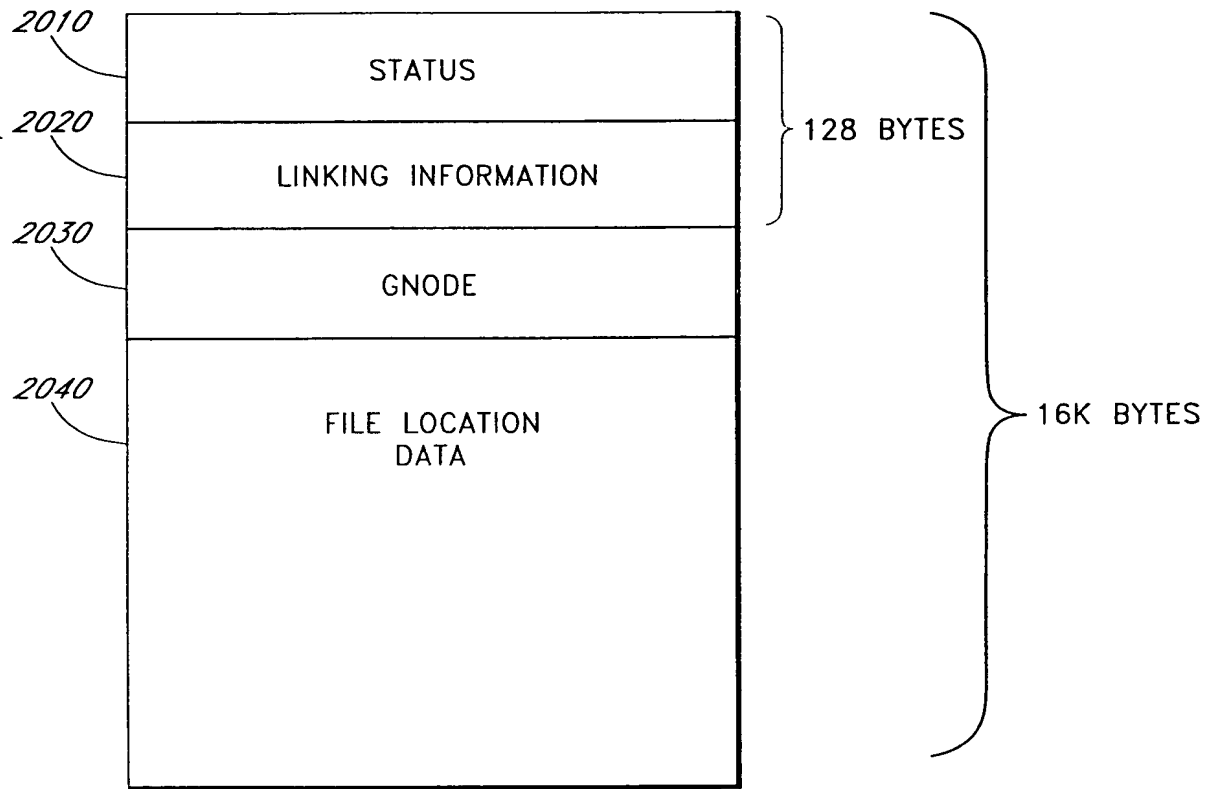


FIG. 19

*FIG. 20A*

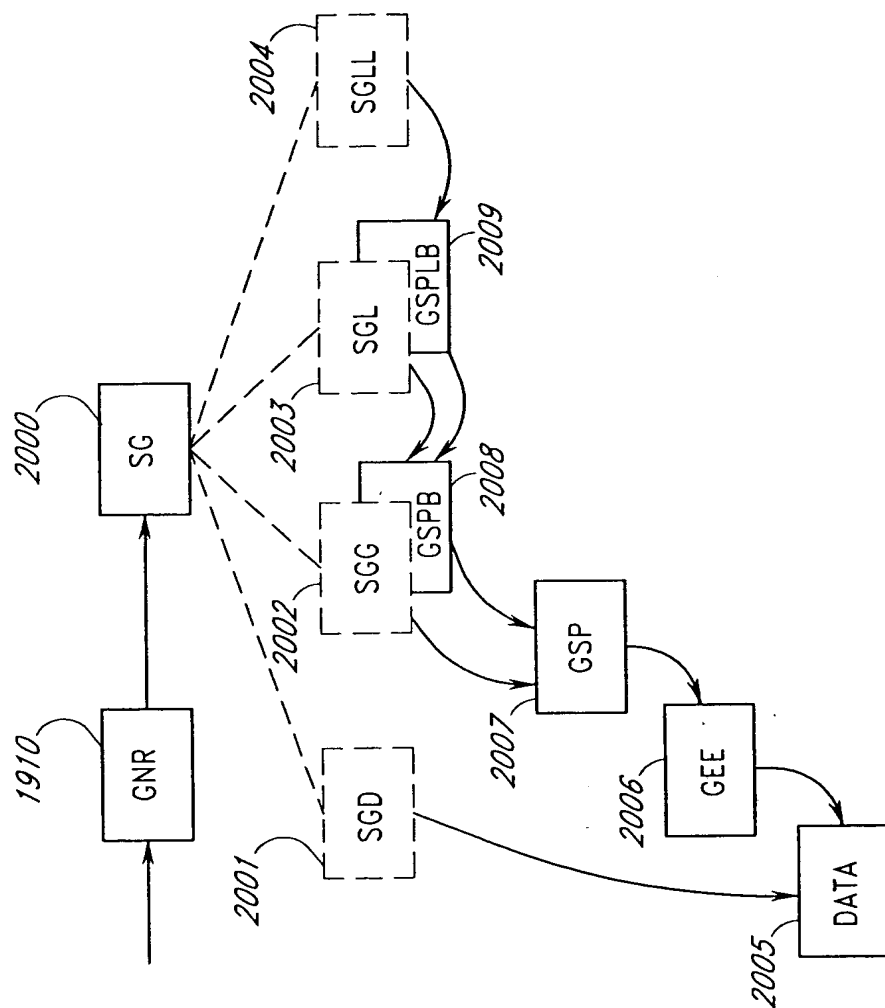
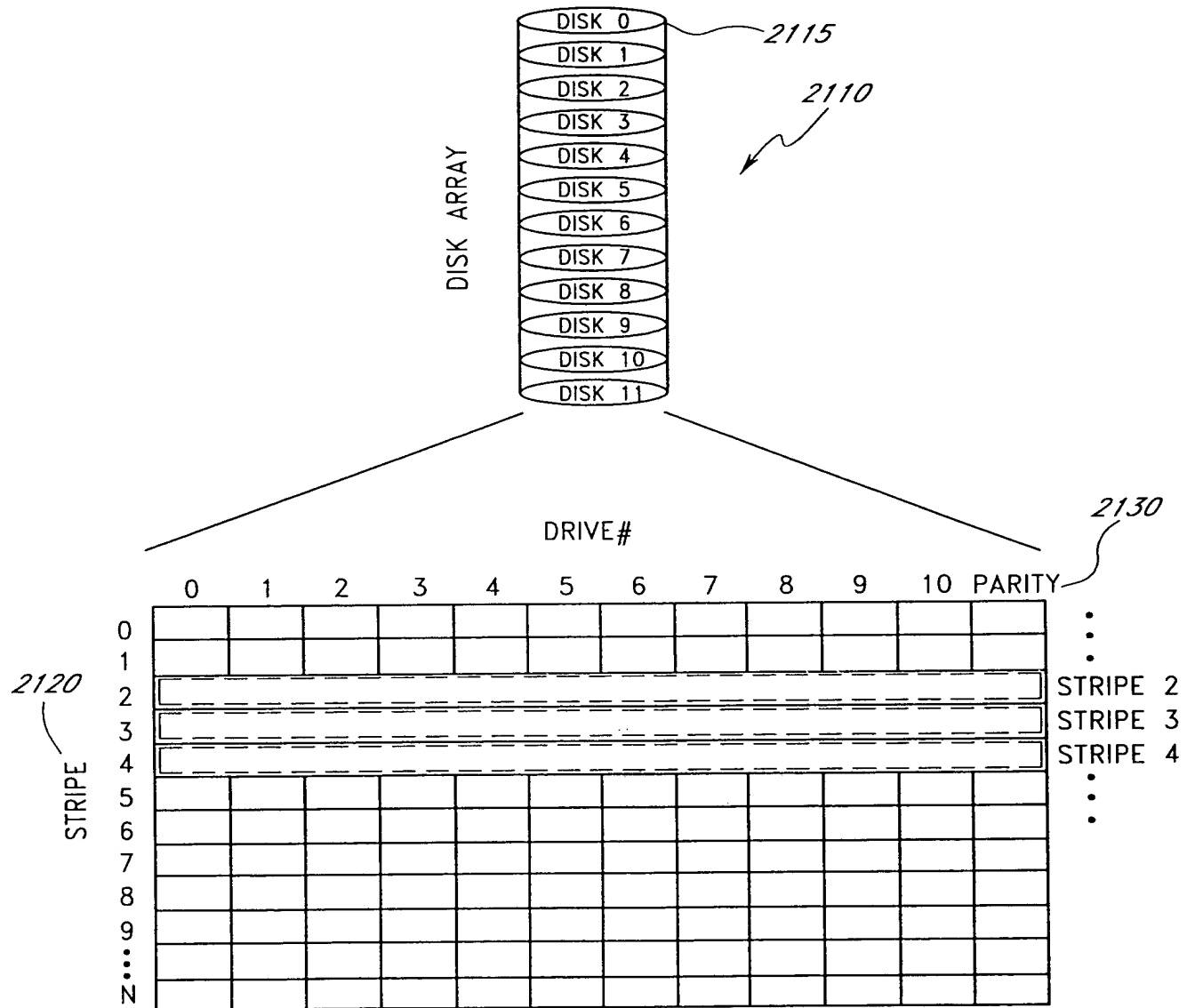


FIG. 20B

CONVENTIONAL RAID MAPPING  
(PRIOR ART)



**FIG. 21**

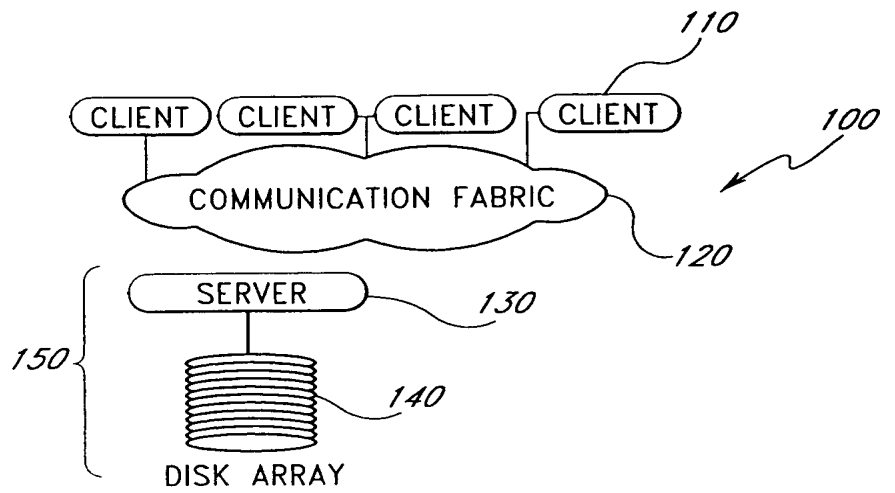


FIG. 22A

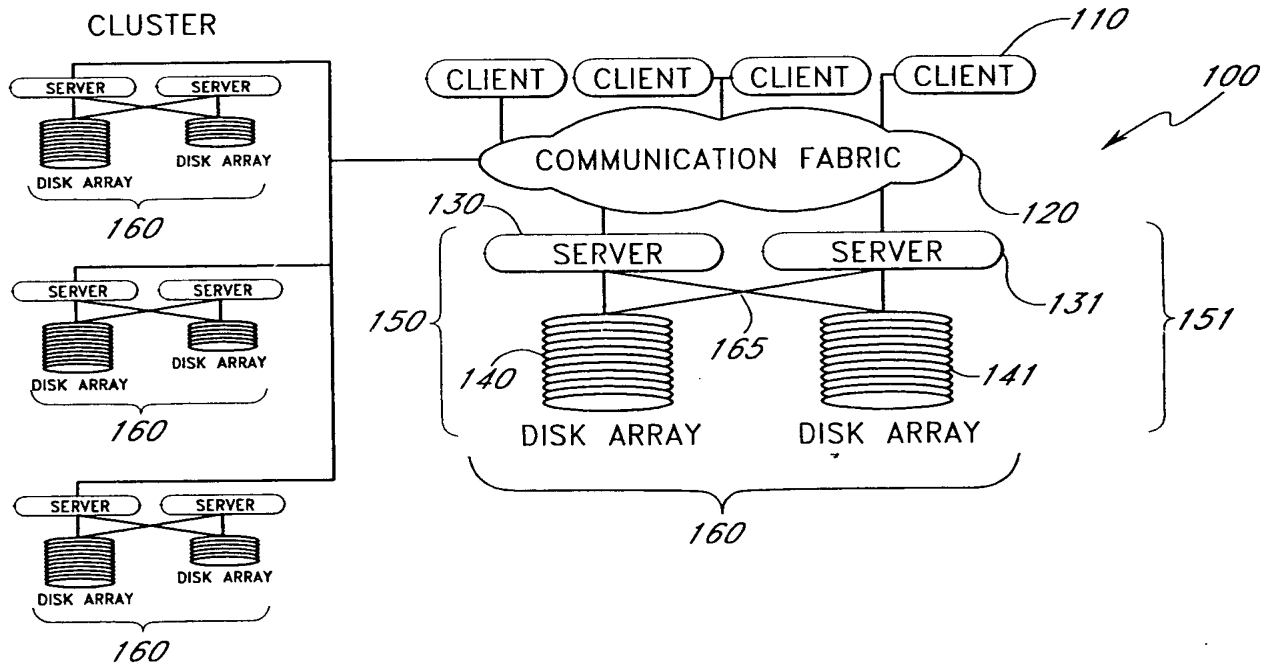


FIG. 22B

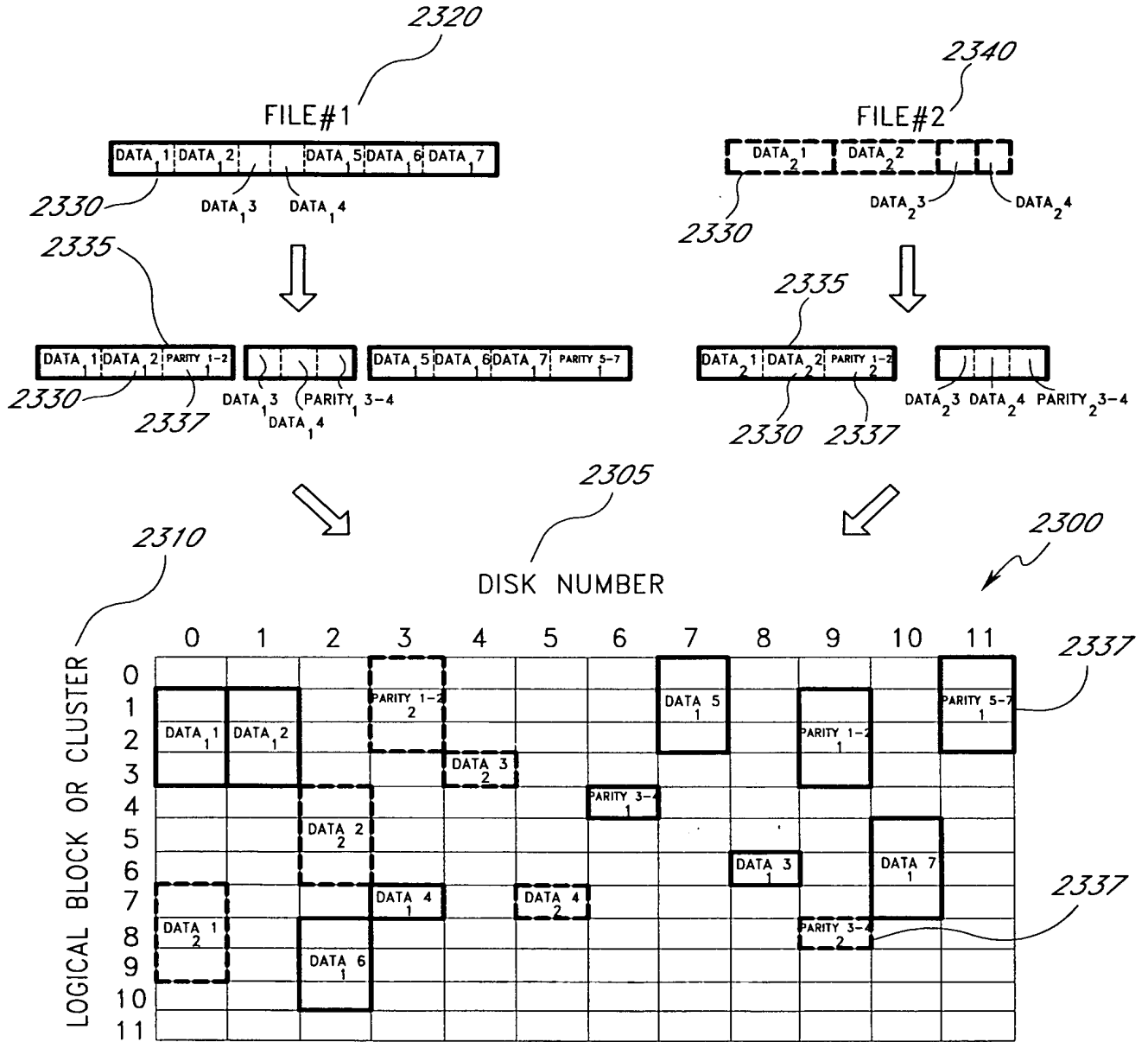
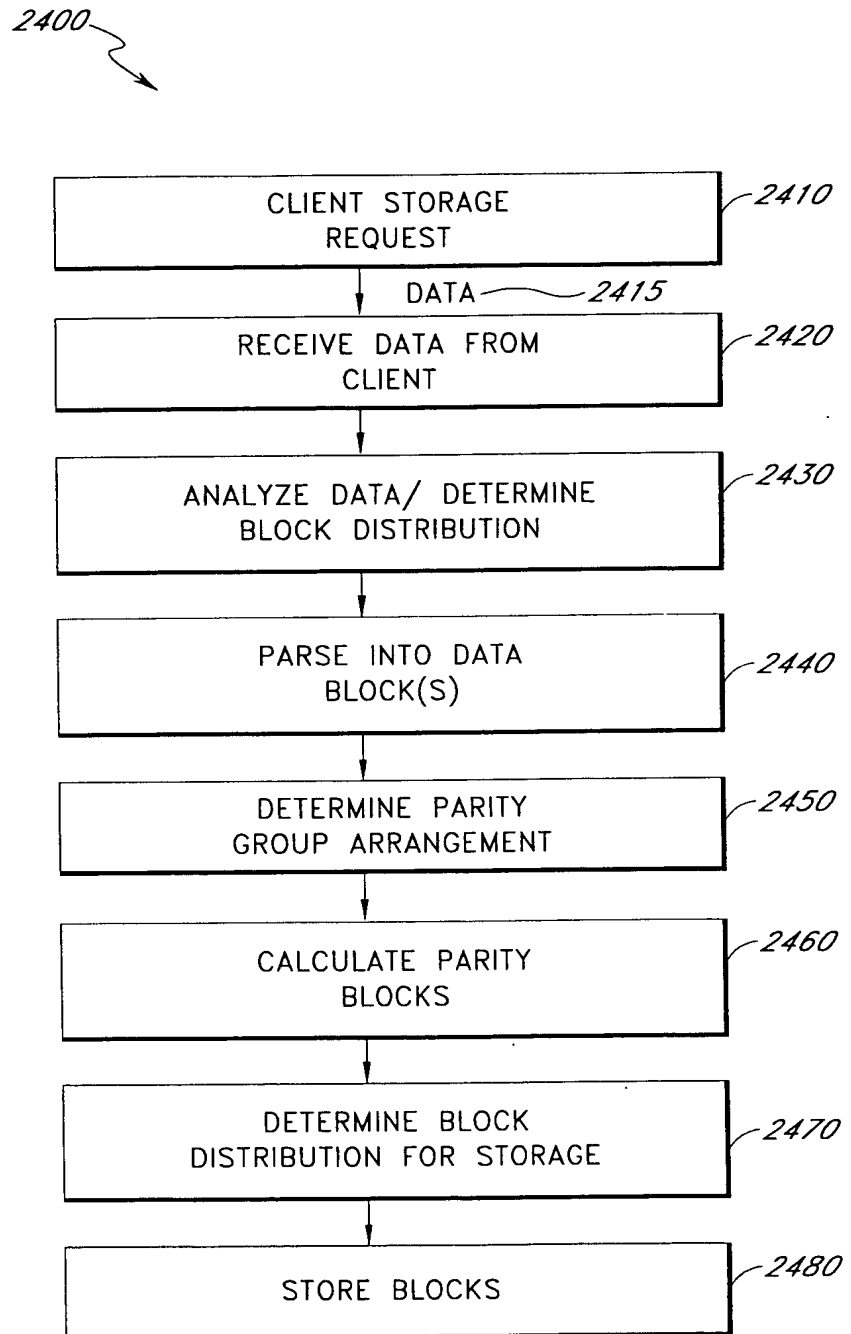
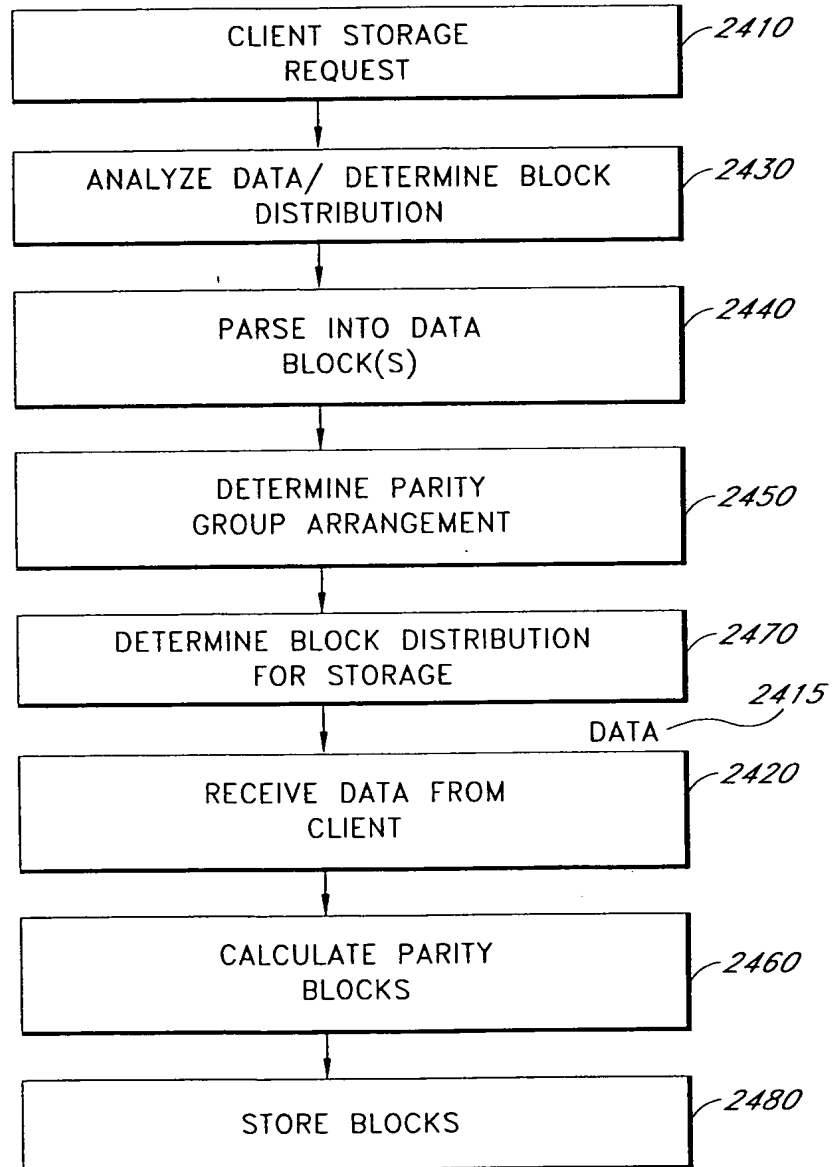


FIG.23

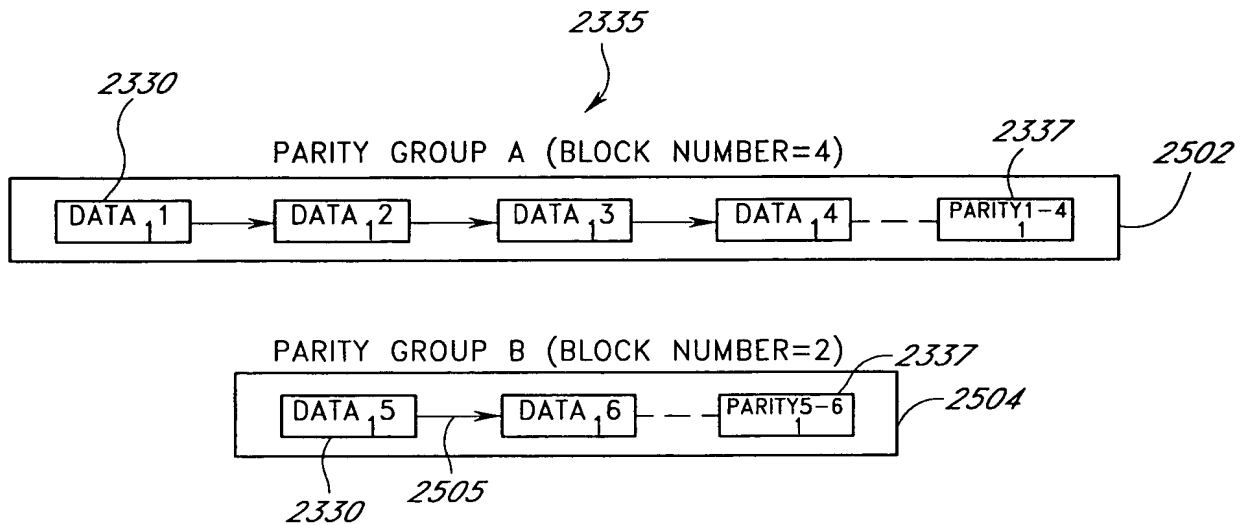
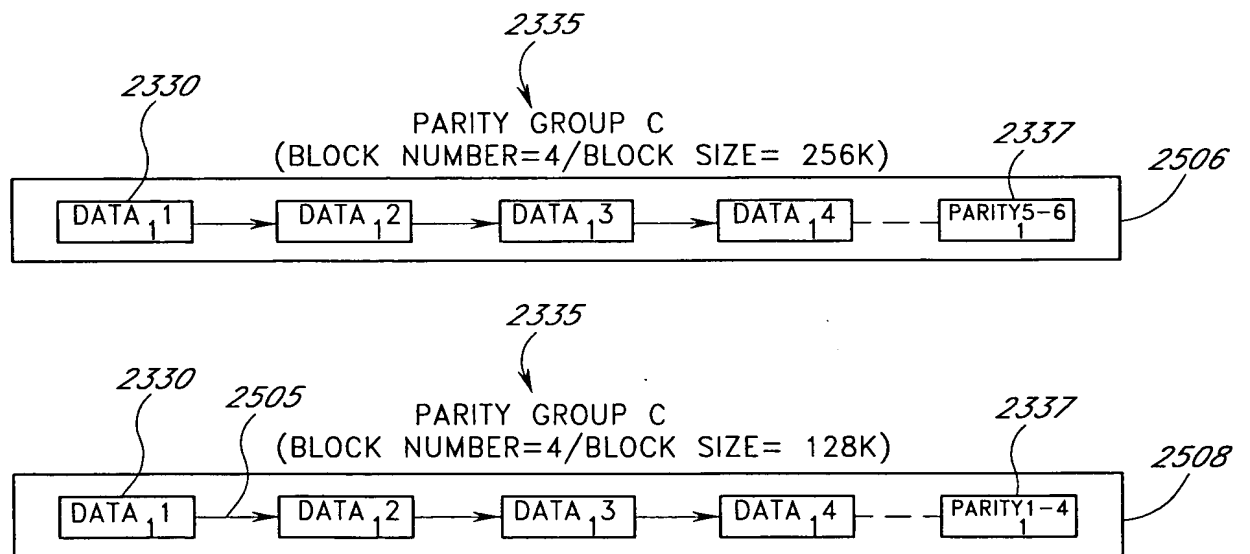


**FIG.24A**

2405

*FIG. 24B*



**FIG. 26A****FIG. 26B**

DISK ARRAY INITIALIZATION USING GEE TABLE  
SPACE ALLOCATION

2530  
↓

2532 INDEX	2534 G-CODE	2536 DATA	2542
...	...	...	
45	GNODE	EXTENT=2	
46	DATA	BLOCKS 456,457:DRIVE 13	2540
47	DATA	BLOCKS 667,668:DRIVE 15	
48	DATA	BLOCKS 112,113:DRIVE 19	
49	PARITY	BLOCKS 554,555:DRIVE 2	
...	...	...	
76	GNODE	EXTENT=2	
77	DATA	BLOCKS 460,461,462:DRIVE 13	2540
78	DATA	BLOCKS 671,672,673:DRIVE 15	
79	PARITY	BLOCKS 121,122,123:DRIVE 19	
...	...	...	
88	GNODE	EXTENT=2	
89	DATA	BLOCKS 463,464,465:DRIVE 2	2540
90	DATA	BLOCKS 674,675,676:DRIVE 5	
91	PARITY	BLOCKS 124,125,126:DRIVE 13	
...	...	...	

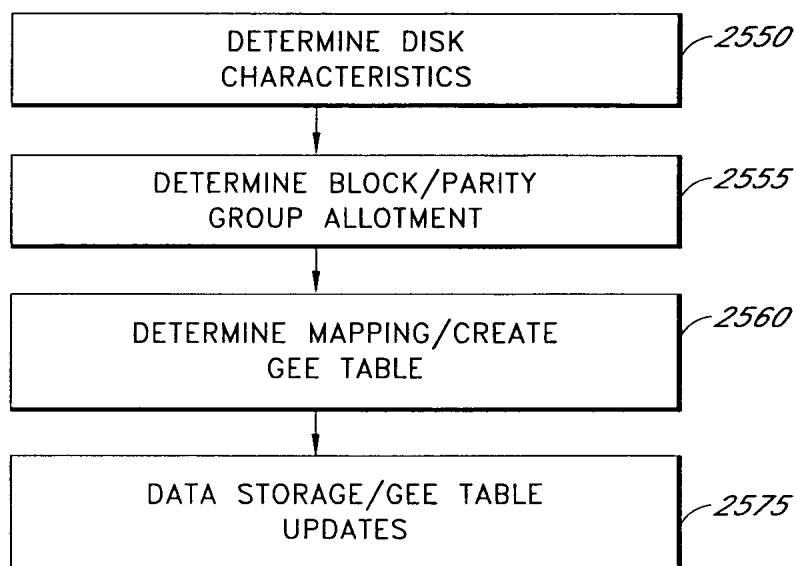
2538

2538

**FIG.27**

2448

## ARRAY PREPARATION/ G-TABLE FORMATTING

**FIG. 28**

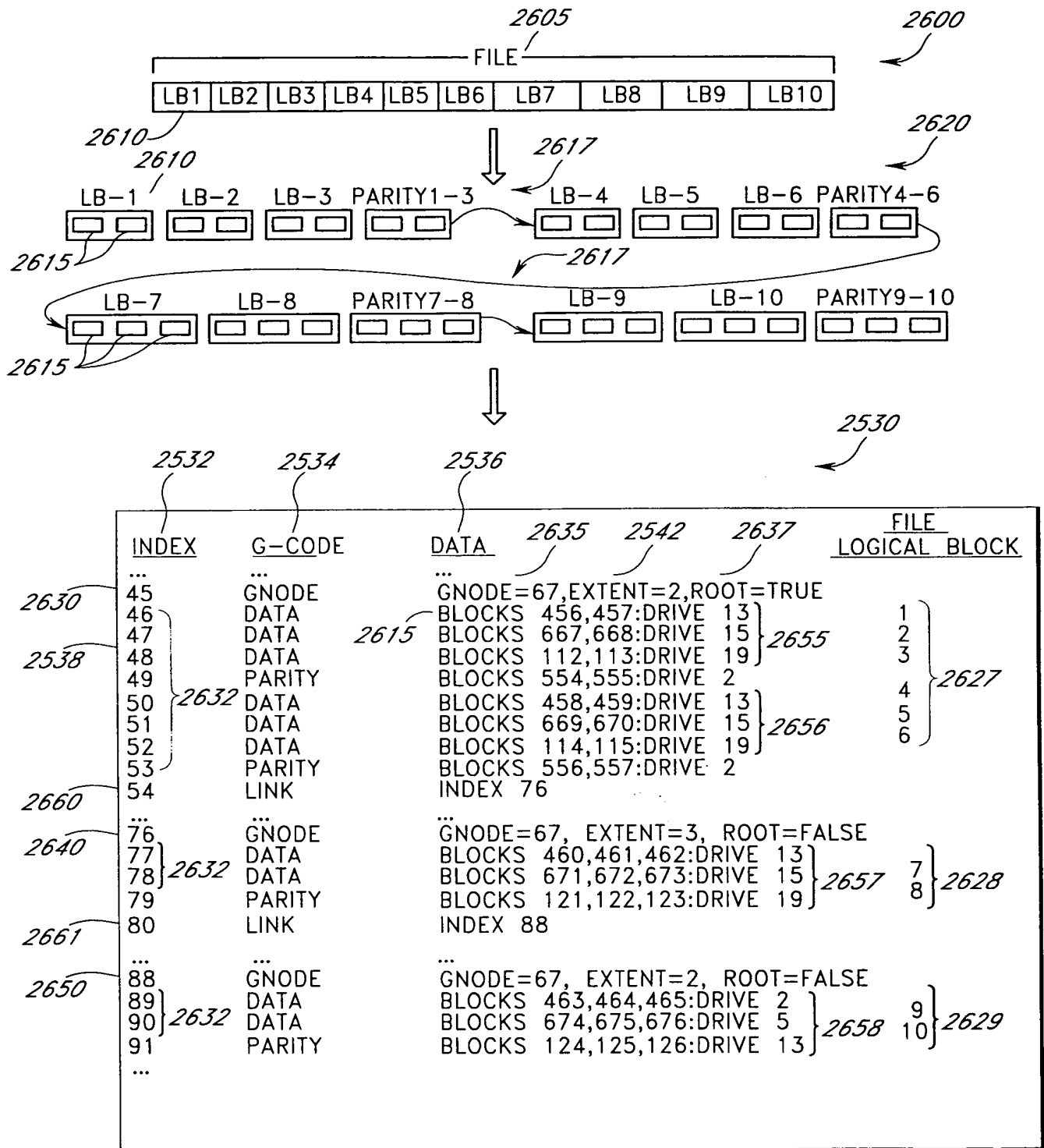


FIG. 29

## DRIVE FAILURE RECOVERY MECHANISM

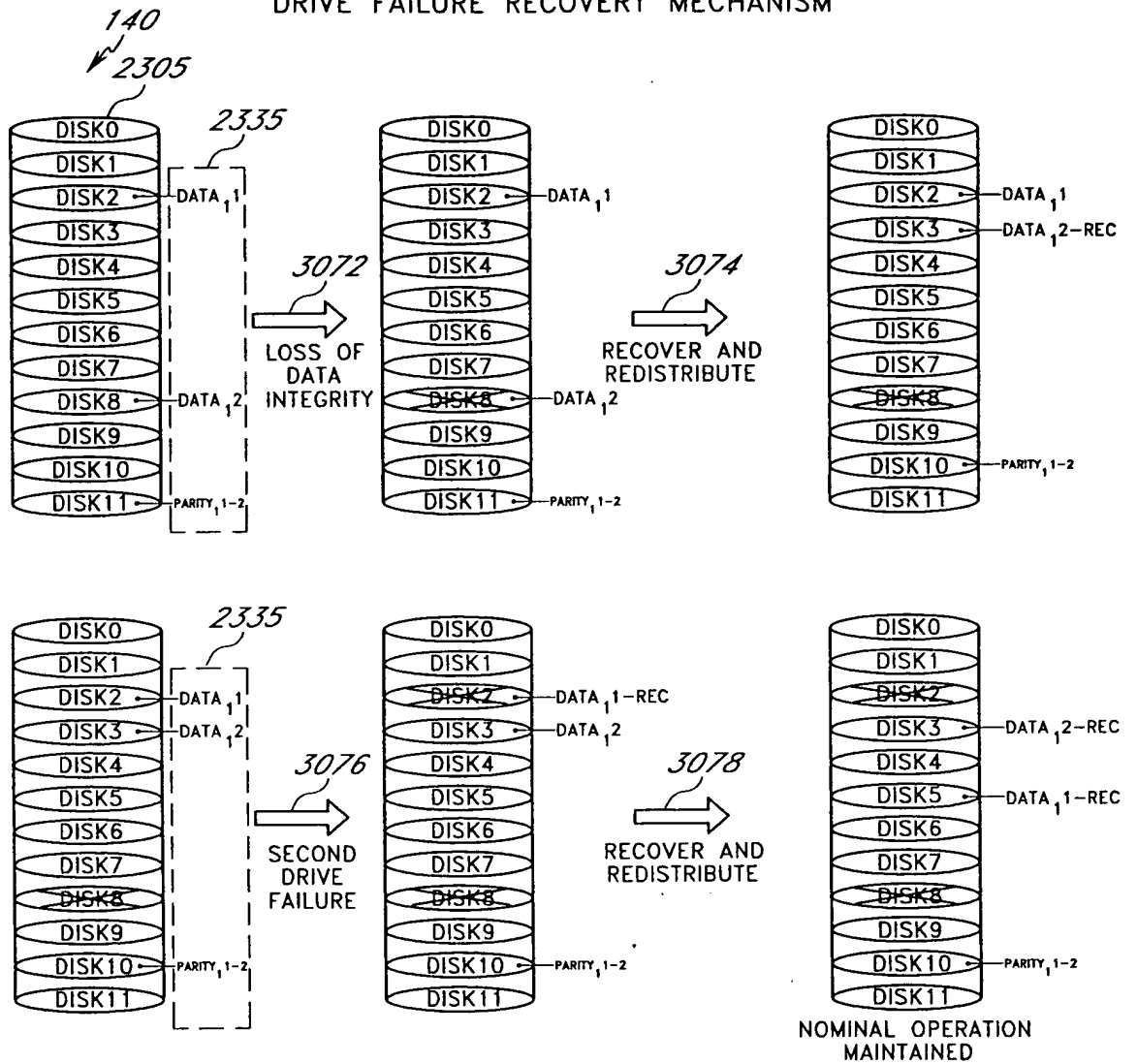


FIG.30



3172

## DATA RECOVERY PROCESS

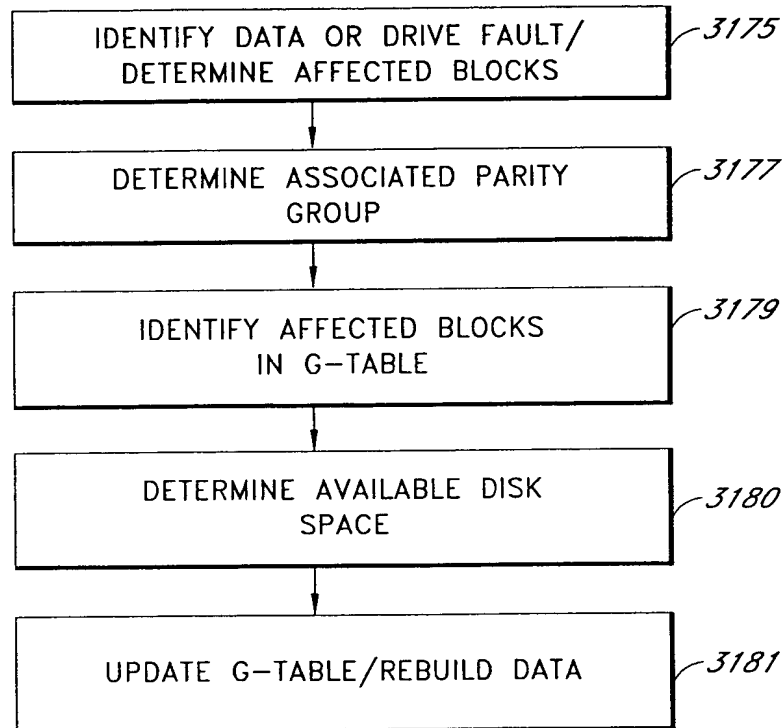
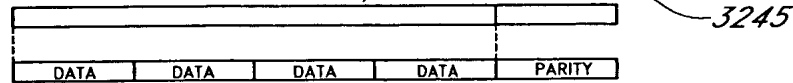
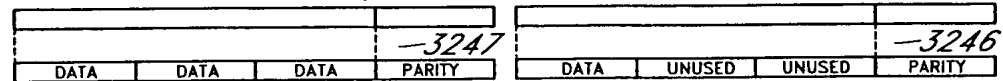
**FIG. 31**

FIG. 32A

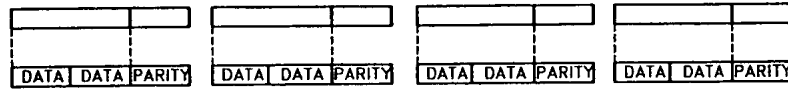
FILE #1  
0 4096  
FILE #1 W/PARITY-4-BLOCK PARITY GROUP-EXTENT=2 ← 3240  
5120 BYTES TOTAL/UTILIZATION=100%



0 4096  
FILE #1 W/PARITY-3-BLOCK PARITY GROUP-EXTENT=2 ← 3241  
8192 BYTES TOTAL/UTILIZATION=66%



FILE #1 W/PARITY-2-BLOCK PARITY GROUP-EXTENT=1 ← 3242  
6144 BYTES TOTAL/UTILIZATION=100%

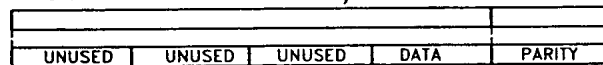


FILE #1 W/PARITY-1-BLOCK PARITY GROUP-EXTENT=1 ← 3243  
8192 BYTES TOTAL/UTILIZATION=100%

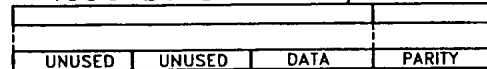


FIG. 32B

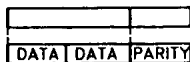
FILE #2  
0 1024  
FILE #2 W/PARITY-4-BLOCK PARITY GROUP-EXTENT=2 ← 3250  
5120 BYTES TOTAL/UTILIZATION=25%



FILE #2 W/PARITY-3-BLOCK PARITY GROUP-EXTENT=2 ← 3251  
4096 BYTES TOTAL/UTILIZATION=33%



FILE #2 W/PARITY-2-BLOCK PARITY GROUP-EXTENT=1 ← 3252  
1536 BYTES TOTAL/UTILIZATION=100%



FILE #2 W/PARITY-1-BLOCK PARITY GROUP-EXTENT=1 ← 3253  
2048 BYTES TOTAL/UTILIZATION=100%



3360

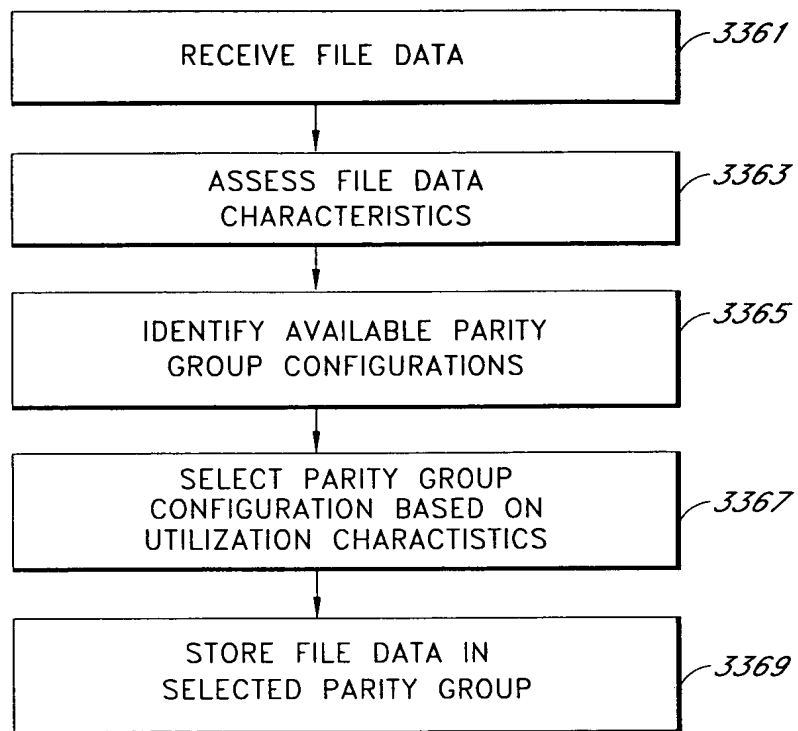
**FIG. 33**

FIG. 34A

	INITIAL ALLOCATION	DISK SPACE%
<div>DATA DATA DATA DATA PARITY</div> 4 BLOCK PANITY	10000 GROUPS	36%
<div>DATA DATA DATA PARITY</div> 3 BLOCK PANITY	10000 GROUPS	28%
<div>DATA DATA PARITY</div> 2 BLOCK PANITY	10000 GROUPS	22%
<div>DATA PARITY</div> 1 BLOCK PANITY	10000 GROUPS	14%

FIG. 34B

	FREE	OCCUPIED	TOTAL	DISK SPACE%
<div>4 BLOCK PANITY</div> 2500 GROUPS	2500 GROUPS	7500 GROUPS	10000 GROUPS	36%
<div>3 BLOCK PANITY</div> 7500 GROUPS	7500 GROUPS	2500 GROUPS	10000 GROUPS	28%
<div>2 BLOCK PANITY</div> 3500 GROUPS	3500 GROUPS	6500 GROUPS	10000 GROUPS	22%
<div>1 BLOCK PANITY</div> 500 GROUPS	500 GROUPS	9500 GROUPS	10000 GROUPS	14%

FIG. 34C

	FREE	OCCUPIED	TOTAL	DISK SPACE%
4 BLOCK PANITY	2500 GROUPS	7500 GROUPS	10000 GROUPS	36%
3 BLOCK PANITY -5000 GROUPS OF 3 BLOCK PANITY	2500 groups	2500 GROUPS	5000 GROUPS	14%
2 BLOCK PANITY +10000 GROUPS OF 1 BLOCK PANITY	3500 GROUPS	6500 GROUPS	10000 GROUPS	22%
1 BLOCK PANITY	10500 GROUPS	9500 GROUPS	20000 GROUPS	28%

REDISTRIBUTION

## PARITY GROUP REDISTRIBUTION PROCESSES

3500

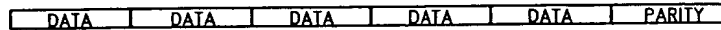
**FIG. 35A**

## PARITY GROUP DISSOLUTION

3510

## 5-BLOCK PARITY GROUP

3515



## 1-BLOCK PARITY GROUP

3520



## 3-BLOCK PARITY GROUP

3525



OR

## 2-BLOCK PARITY GROUP

3530



## 2-BLOCK PARITY GROUP

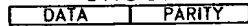
3530



OR

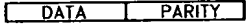
## 1-BLOCK PARITY GROUP

3520



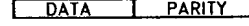
## 1-BLOCK PARITY GROUP

3520



## 1-BLOCK PARITY GROUP

3520

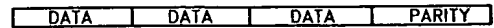
**FIG. 35B**

## PARITY GROUP CONSOLIDATION

3535

## 3-BLOCK PARITY GROUP

3525



## 1-BLOCK PARITY GROUP

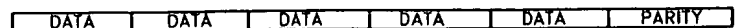
3520



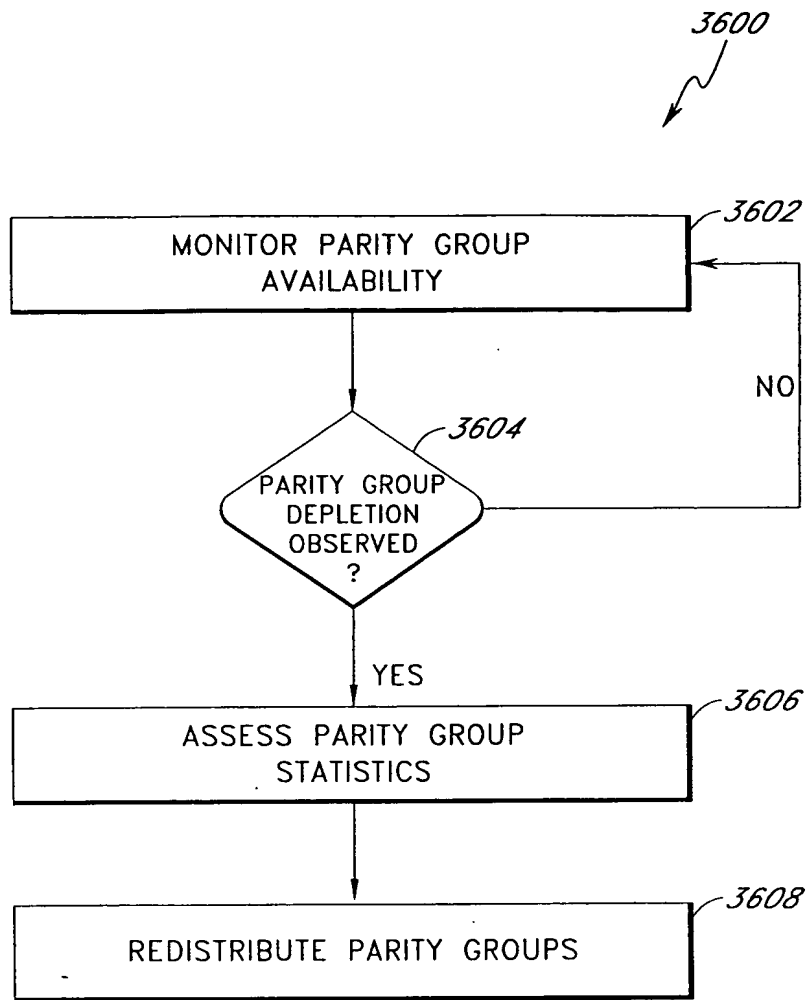
OR

## 3-BLOCK PARITY GROUP

3515



2025 RELEASE UNDER E.O. 14176

*FIG. 36*

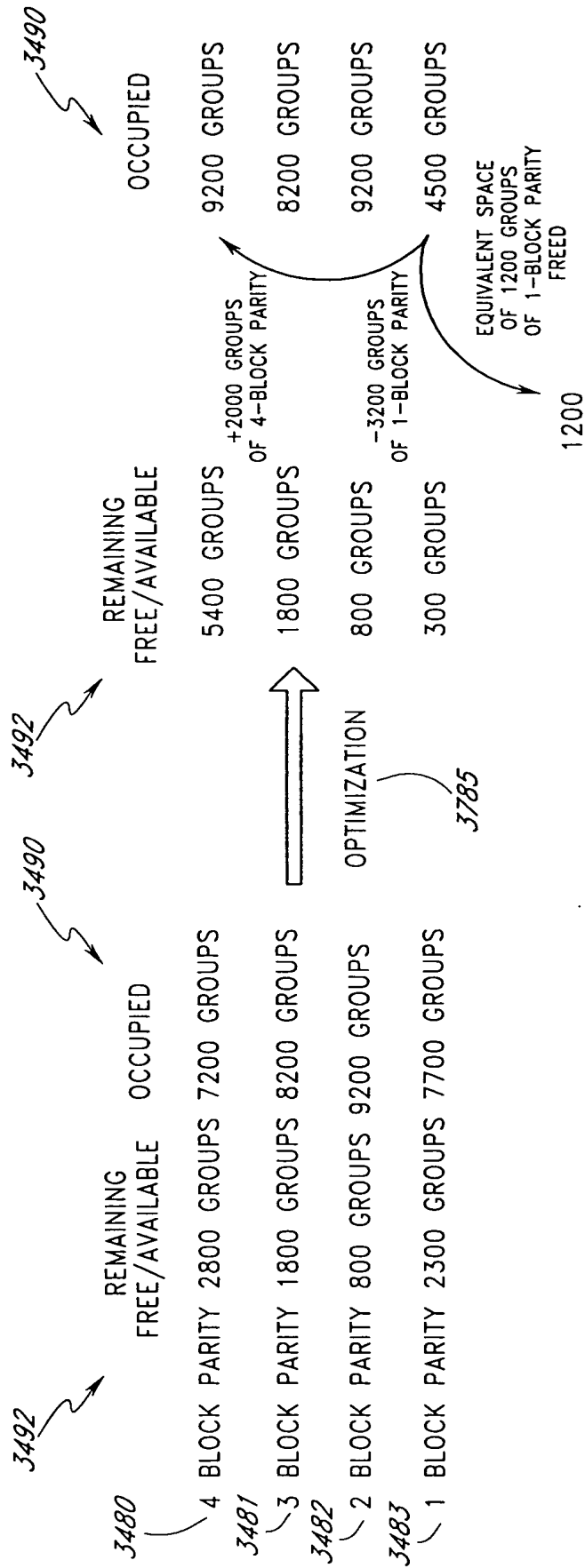
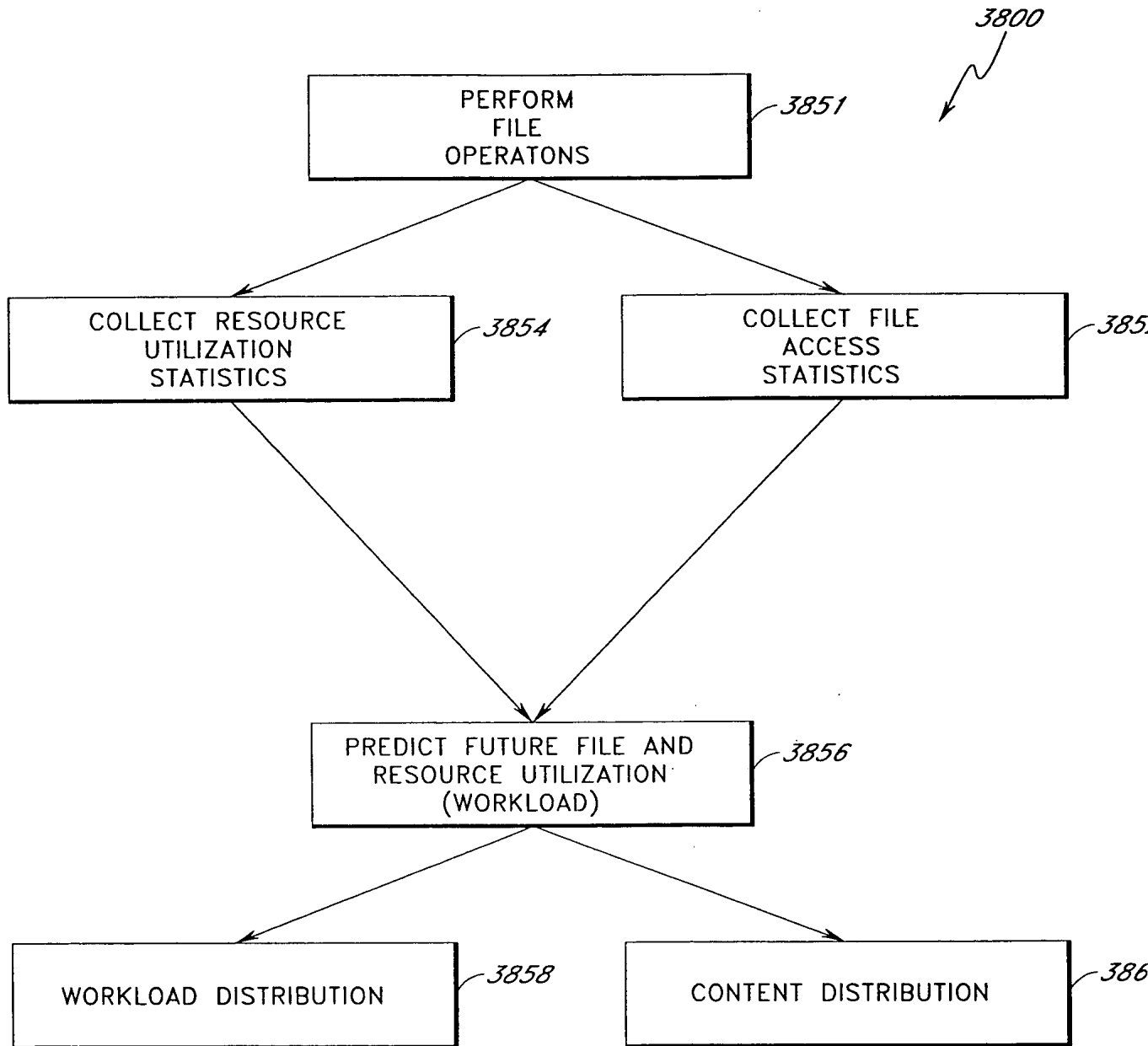


FIG. 37

**FIG.38**



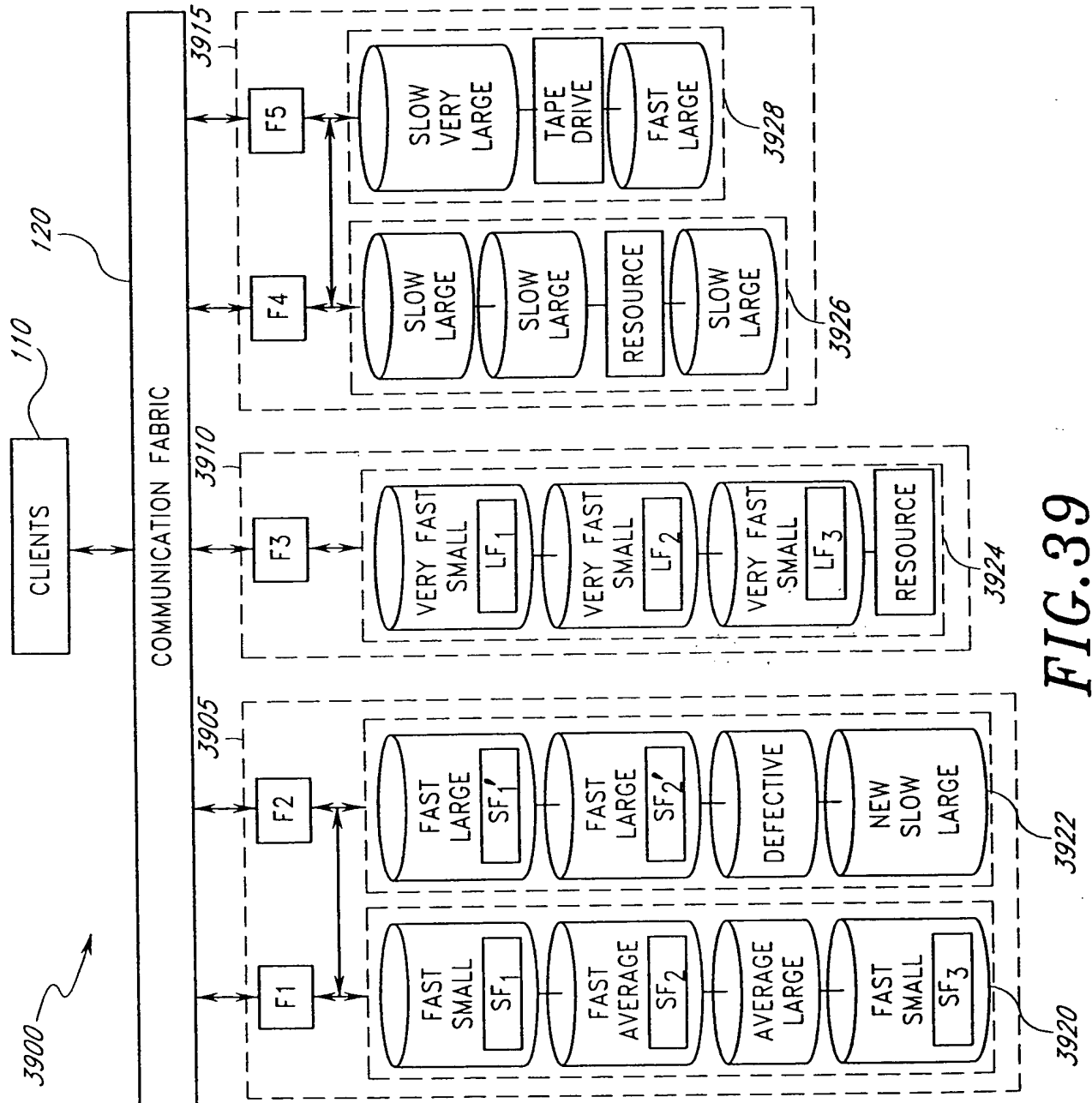


FIG. 39



### F3 OBJECT POSITIONING PLAN

- PUSH LF TO F4-F5 CLUSTER
- ISSUE FILE HANDLE FOR LF=STALE
- IF REQUESTED,
  - SEND ACCEPTANCE FOR COPY OF SF TO F1
  - CREATE COPY OF SF
  - SEND FILE HANDLE OF SF TO F1

4025

***FIG. 41***

2025012503001

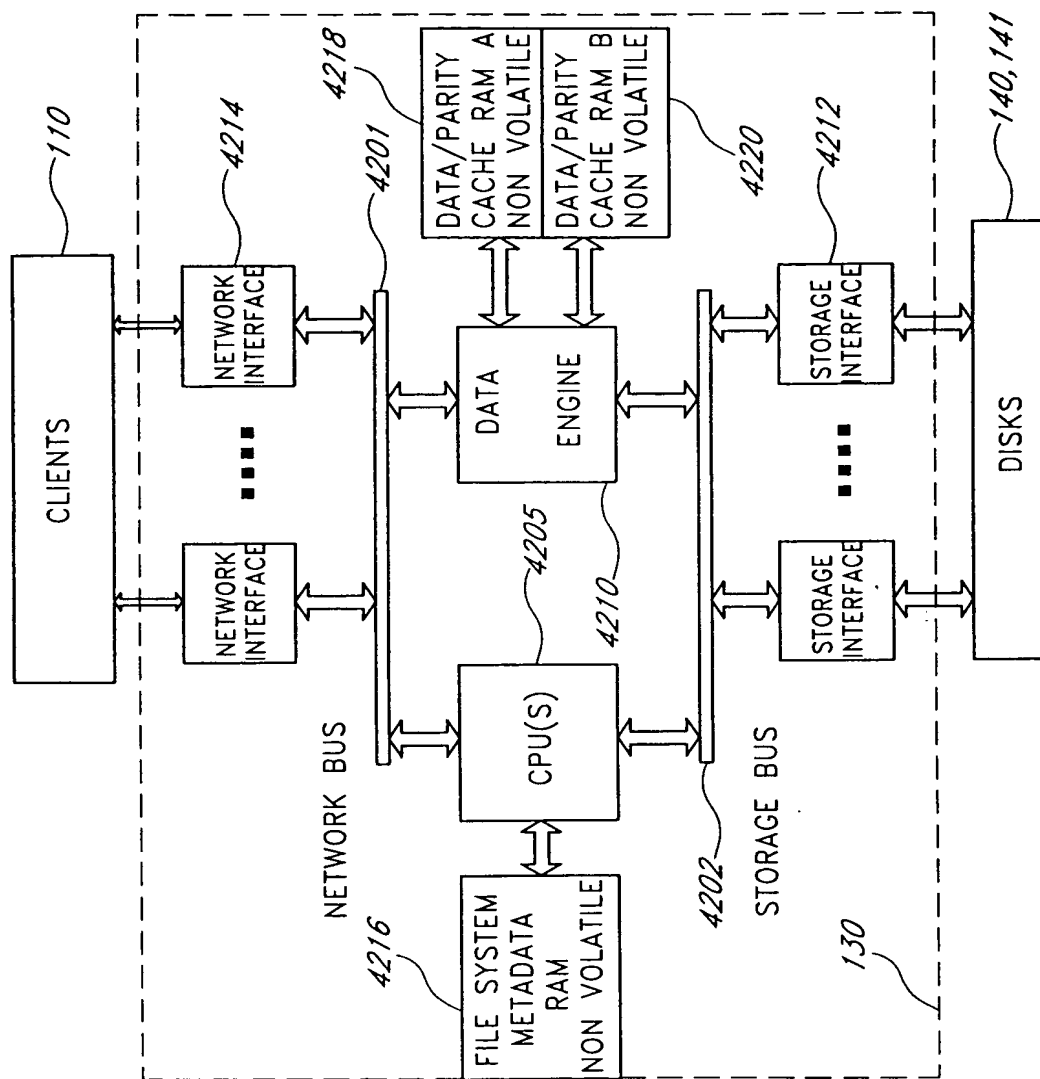


FIG. 42

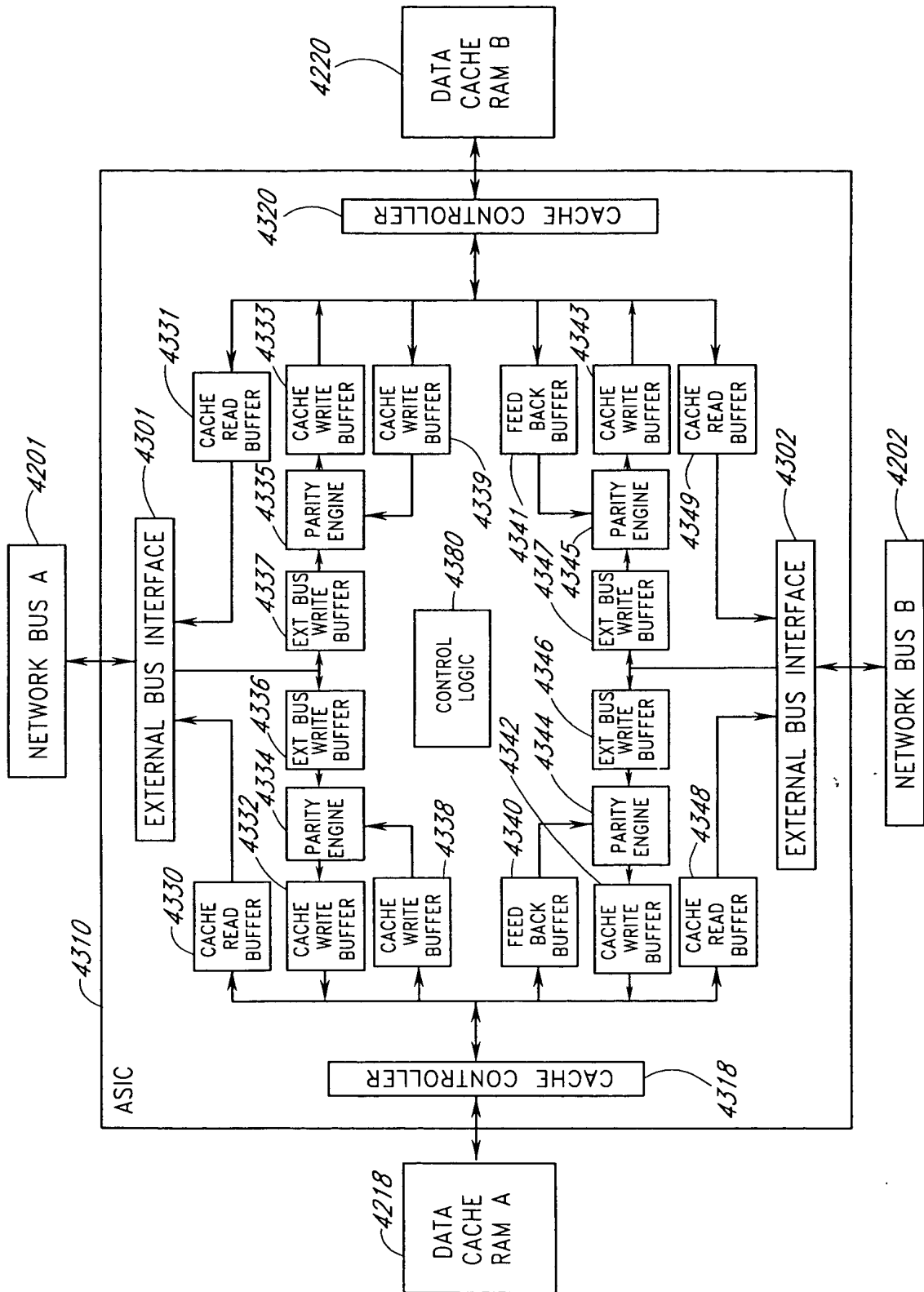


FIG. 43

PCI MAP	BLOCK SIZE	OPCODE	SPARE	PARITY INDEX	SPARE	RAM ADR
---------	------------	--------	-------	--------------	-------	---------

63.....62,61 .....59,58 .....56,55 .....51, 50 .....35,34,32, 31 .....0

4400

FIG.44